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12 SETUPS TO
START
SEEDS
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MOTHER EARTH NEWS

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LYNN KARLIN; BELOW: STOCKFOOD/DAVE CARLIN



BELOW: EDWARD HOLLMEN; RIGHT: ISTOCK/SASHABUZKO



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"Even the strongest blizzards start with a single snowflake."

— Sarah Raash

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The Big Fat Lies

Our article “Fat Matters: Understanding the Science” (Page 45) may be the most important health news we’ve ever shared with you.

Fats, it turns out, are far more complicated than we realized, and mainstream medicine and nutrition experts have misguided us—in a big way. For more than 40 years, we’ve been told that eating fat is what *makes* us fat. Now, a closer look at the accumulating evidence is revealing that this advice is wrong. The presumed link between heart disease and eating cholesterol and saturated fats is also questionable. What about the corn, soy and other vegetable oils that we’ve been told are better choices than butter and lard? We now know that butter and lard from pastured animals are better than the so-called “good fats” found in vegetable oils. (One exception to this rule is olive oil, which is still a very good option.)

This shift in understanding what we should eat is huge. It’s going to take us a long time to erase the mistaken idea that low-fat is good, and to stop avoiding foods rich in cholesterol and saturated fats.

The second part of our article describes the emerging insight into the omega class of polyunsaturated fats—omega-3 fats and omega-6 fats in particular. Both are essential in our diets, but we need to eat them in the right amounts. Thanks to Big Ag’s dependence on corn and soybean oils, most of us consume way too much vegetable oil, which is high in omega-6s. High-omega-6 soy and corn are so cheap to produce that they’re used heavily in processed foods, and are the primary feeds on factory farms for fattening livestock, which then transfer those omega-6s to us via their meat, milk and eggs. The ratio of these two types of fats is now severely out of balance in the average person’s diet.

Forget what
you’ve been told:
Most vegetable
oils are *not*
healthful choices.

Excess omega-6s can affect nearly every major human physiological process. They may hamper immune function and increase the incidence of inflammation, arthritis, asthma, back pain, headaches, cardiovascular disease, bone density loss, Alzheimer’s disease, stunted brain development, behavioral disorders, depression and suicide.

Only plants produce essential omega-3 fats, which are then concentrated in fish and grazing animals. We access these good fats when we eat *wild-caught* fish or *pastured* meat, eggs and dairy. But when we consume conventional, factory-farmed meat from animals raised on corn and soybeans, our diets result in a ratio of omega-6 to omega-3 that’s unnatural and harmful.

This is good news for homesteaders and pastured livestock producers. Using natural grazing methods will result in more healthful meat, eggs and dairy. As the public comes to comprehend this new knowledge about fats, markets for sustainable grass-fed products will grow, and unsustainable factory farming

will be challenged to change.

We’ve worked hard to present this new information about fats as clearly as possible. We urge you to take note of this research and consider the importance of eating more omega-3s. To learn about how this radical knowledge has emerged, read *The Big Fat Surprise: Why Meat, Butter & Cheese Belong in a Healthy Diet* by Nina Teicholz, and *Why We Get Fat and What to Do About It* by Gary Taubes (both available on Page 64).

Stay tuned for follow-up articles in 2016, including a report on which vegetables are richest in omega-3s, results from our testing of pastured products, and ways you can improve the omega-fats content of your animal feeds.

—MOTHER

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Dedicated Reader Retires

I've been reading MOTHER since 1975, and I still have every issue I've ever purchased. Because of your magazine, we bought acreage in the country—and still live on it! I can also quilt; make soap; and can, freeze and dehydrate a wide range of edibles.

Unfortunately, it's time that I retire my subscription. I'm afraid I'm getting a little old, and just can't do what I used to. I'll miss you, MOTHER. Thank you for 40 years of the all-time best magazine on the planet!

*Phyllis Johnson
Dover, Florida*

You're welcome, Phyllis! Thanks for staying with us through the years. We feel lucky to have such dedicated and engaged readers. —MOTHER

A Solar Shed

I'm interested in building a solar “power plant.” I can't afford to install solar panels on my whole house, but I am curious about building a solar shed to power a refrigerator and charge power tools if the grid ever fails. Do you perhaps have an article or some advice on this? Thanks for all the great information!

Kevin Altmiller

Kevin, our article “DIY Solar Power System Offers Easy Emergency Power Supply” (Ask Our Experts, December 2012/January 2013) should answer your question. Check it out online at <http://goo.gl/kE3M6S>. —MOTHER

The Ties That Bind

I recently read the article “The Ties That Bind” (Beautiful and Abundant, February/March 2014), and I want to thank you! It's frustrating to see politicians and pundits group people into parties to support their own platforms. I'm grateful that your article addressed this.

In my family, the Republicans are the green health nuts, and the Democrats are not. In my husband's family, it's the reverse. Being a responsible citizen and caring for the Earth should have no bearing on political party, financial situation, employment or location.

Ruth Mills

Surrounded by CAFOs

Your article “Bird Flu Explodes in Factory Farms, Again” (Green Gazette, October/November 2015) is particularly timely for my community. I live in rural Randolph County, Arkansas. It consists of only 656 square miles, and, as of 2010, the population for the entire county was 17,969. Peco Foods Inc. is the eighth-largest poultry producer in the country, and the company plans to build approximately 600 large concentrated animal feeding operations (CAFOs) in our small county. Peco Foods brought in about \$1 billion in revenue in 2012, and some of its clients include

Tyson, Buffalo Wild Wings and Church's Chicken.

Yes—600 huge factory farms will soon surround us here in Randolph County. This has pitted neighbor against neighbor. The farmers think they'll be making millions of dollars by raising chickens for the Peco plant.

These 550-foot-long chicken houses are no longer required to have cement floors, and because they'll be on bare ground, many people living near the future CAFOs are extremely worried that the small springs, creeks and rivers nearby will be damaged by high levels of runoff.

The public really needs to be aware—as your article stated—that taxpayers already had to spend more than \$3.3 billion this year on cleanup expenses of the bird flu outbreak (via the U.S. Department of Agriculture). All taxpayers should be outraged!

*Cynthia Parke
Imboden, Arkansas*

Cynthia, we're sorry to hear about your county's situation. Our article “Another



Dear MOTHER

High Cost of Factory-Farmed Meat: The Death of Small Towns" (December 2014/January 2015) offers more information about the local impact of concentrated chicken production. —MOTHER

Q Fever: Similar to Lyme Disease

I enjoyed the article "Top Ways to Get Rid of Ticks" in your August/September 2015 issue. Another infectious disease that most people aren't aware of is called "Q Fever." It is rare, but can cause the same symptoms as Lyme, and can also become serious. When I was 46 years old, I suddenly developed severe arthritis in all of my joints. Three months after a tick bite, I couldn't even stand up without support, and I lost most of the strength in my hands.

After my test results came back negative for Lyme, my doctor referred me to an

infectious disease specialist, who was familiar with Q Fever, to be tested. My results were positive.

I'm writing because I know many people are in chronic pain, and some are being treated for fibromyalgia because their doctors can't determine what's wrong with them. If you're one of those people, ask your doctor to test you for Q Fever. Learn more online at www.CDC.gov/QFever.

*Nova Randolph
Thompsonville, Illinois*

Sometimes, Ticks Happen

Your recent article about ticks had many useful suggestions. In spite of attempts to minimize and ultimately eliminate the threat, however, sometimes "ticks happen."

I read in *Consumer Reports* that a Sawyer product based on the synthetic compound Picaridin

is highly rated, and now I swear by it!

The *Consumer Reports* article notes that Picaridin can stain clothes. However, the Sawyer customer service team provided an approach for avoiding the minimal fabric staining the product can cause: Apply the Sawyer products while still in your undies. Let dry for several minutes, and then dress in your outdoor togs. No stains!

*Bill Best
Arlington, Washington*

Roundup Linked to Non-Hodgkin Lymphoma

Thank you for the article "Monsanto Has Exposed Us to a 'Probable Carcinogen' for 40 Years" (News from MOTHER, June/July 2015). A few years ago, I came across the results of a study on glyphosate—the main ingredient in Roundup—published on March 15, 1999, by the *American Cancer*

Free Quilts for Needy Individuals

The nonprofit Free Quilts was founded in 1994. Twenty women, including me, sew quilts out of donated fabrics, and send the finished quilts all over the United States to people in need—the poor, elderly, homeless and disaster victims. We never sell any of our handmade quilts for profit.

We've given away nearly 10,000 quilts since 1994, but our need for donated materials is ongoing. We need scraps of clean fabrics, which could be from a dress, shirt or curtain. We also accept donations of battings, quilt tops, kits, blocks, threads, used sewing machines (working or not, I can repair them), scissors and thimbles. We can only make the quilts when we receive donated materials.

If any MOTHER EARTH NEWS readers have supplies they would like to donate to this cause (no money donations, please), we'd gratefully accept any goods sent to: Free Quilts, 2056 Stewarts Corners Rd., Venice Center, Scipio, NY 13147. Thank you!

*C.A. Shaw
Scipio, New York*



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Hot for Geothermal Energy

In my opinion, geothermal energy has not been given the attention it deserves. Many homes aren't conducive to wind or solar, but everyone can tap into the benefit of geothermal. In my quest to minimize my use of fossil fuels, I researched geothermal and felt that it would give me the biggest benefit and return on investment. Last April, we replaced our propane furnace and hot water heater with a ClimateMaster geothermal system. We've been satisfied with the results so far.

We expected our electric use to rise as a result of the new system, but we've only seen a small increase in our electric bill—about \$6 per month. Additionally, when the system is in cooling mode, the removed heat transfers over to the hot water heater, which in effect gives us “free” hot water. Now, I'm considering installing solar to help cover some of the electric cost. Because the federal incentives for geothermal are scheduled to expire at the end of 2016, now is a good time to consider this Earth-friendly means of heating and cooling your home or business.

*Lesle Goodhart
Blanchester, Ohio*



Geothermal systems tap energy from the Earth to heat and cool homes.

Society (available online at <http://goo.gl/ii2kMj>). Eminent oncologists Lennart Hardell and Mikael Eriksson led the study, and they found a clear link between glyphosate and non-Hodgkin lymphoma.

That was 16 years ago, and cancer organizations should've drawn more attention to it by now. I'm sure all the non-Hodgkin lymphoma victims would've appreciated the information. MOTHER EARTH NEWS is an important source of news in my world; thank you!

*Janice Carter
Orlando, Florida*

September 2015), you included some good tips for tick removal. Folks could also try applying olive or coconut oil to their skin where the tick is attached.

Oil, in many cases, suffocates insects by coating their breathing patches. I wonder whether this might work on ticks, too. I would probably add another ingredient, such as rosemary oil (an antiviral). I would apply the oil after taking a shower, and then I'd scrape off any excess oil, along with any critters.

*Jeanette Schuler
Oakland, California*

Oil for Tick Prevention

In the last paragraph or two of the article “How to Get Rid of Ticks and Prevent Lyme Disease” (August/

Soy's Link to Obesity

Richard Manning's powerful article “Soy's Surprising Link to Obesity” (Green Gazette, August/September

2015) has influenced the way I shop at the grocery store. My husband and I, both in our 80s, struggle to keep our weight down with exercise and careful diets. In an effort to eat well, we purposefully chose to eat more chicken and fish than red meat. We tended to buy industrially raised poultry and fish products, however, so I was disappointed to read that those animals are fed diets heavy in soybean oil—which contains an omega-6 fatty acid that's linked to obesity. This is new-to-us information about the health benefits of buying pastured or organically raised meat and fish.

An article in *Newsweek* magazine from August 23, 2004, titled “When Fat

(CONTINUED ON PAGE 76)

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Let's Take Back Our Garden Seeds

Sharp-eyed gardeners navigating select seed catalogs this winter and spring may notice an unfamiliar category: "Open Source" seed.

This new brand, labeled as "Open Source," "OSSI" or "Open Source Seed Initiative," takes its place alongside more familiar designations, such as "heirloom" and "Certified Organic," meant to help shoppers narrow their choices. But OSSI is really more of an anti-brand because it designates "freed seed." That means any variety carrying this label is unencumbered by patents and other restrictions that increasingly take varieties out of circulation, as patented seed can't legally be saved, replanted or shared, and must be repurchased year after year.

Most troubling: Patented genetics can't be used for plant-breeding purposes, meaning breeders at universities and small seed companies—who do promising work, particularly on organic seed—feel this shrinking diversity head-on. Raw material is lost to corporate control. In this growing genetic vacuum, plant breeders can't access the full diversity of what should be our shared seed heritage. Now, especially, we need new varieties that are better adapted to organic growing and a changing climate.

That's where the Open Source Seed Initiative comes in. It's an open commons for germplasm (genetic material), formed in 2012 as a collaboration between breeders, farmers and seed companies, and modeled after open-source software. OSSI has set up a parallel, alternative track to the handful of corporate giants that own most global seed assets.

"We're working to build a commercial model so people can buy freed seed," says Jack Kloppenburg, an OSSI board member and sociologist emeritus at the University of Wisconsin, Madison. He has been fighting corporate control of seed for three decades. "No matter what Monsanto, Seminis and Syngenta do, OSSI can do its own thing alongside, proactively. Not to say we won't

worry about what happens out there; the issues are substantial. But to the extent that OSSI can support and be part of the alternative system, that's where we want to be."

Author and OSSI plant breeder Carol Deppe of Oregon's Fertile Valley Seeds is fighting this battle, too. "The old public-domain model of a commons for seed ultimately doesn't work; it's a losing battle," she says. "We open-source breeders keep putting improved germplasm into the commons, but the big corporations keep taking it out." To address this, OSSI's tactic has a twist: It comes in the form of a simple pledge, one accepted by breeders and also by those who subsequently use the pledged seed. Breeders agree to share the results of their original work freely, with the proviso that anyone who later uses pledged seed will also agree to share any breeding

results freely—making OSSI not just a commons, but a *protected* commons.

Other prominent OSSI breeders include Tom Stearns of High Mowing Organic Seeds, Frank Morton of Wild Garden Seed, and Irwin Goldman of the University of Wisconsin, Madison. The first 15 companies to offer OSSI-pledged seed are Adaptive Seeds, Backyard Beans and Grains, Bountiful Gardens, Cultivariable, Family Farmers Seed Cooperative, Fedco Seeds, Fertile Valley Seeds, Fruition Seeds, High Mowing Organic Seeds, Lupine Knoll Farm, Nichols Garden Nursery, Oikos Tree Crops, Restoration Seeds, Siskiyou Seeds, and Wild Garden Seed.

Available varieties now number close to 100.

Loss of diversity is a global problem, and Kloppenburg says the organization is thinking about an international version of the pledge, via a partnership with the Centre for Sustainable Agriculture in India. Kloppenburg invites gardeners to do their part in helping protect our seeds from corporate control by buying OSSI seeds, and by contributing to the organization. Learn more and see a list of all pledged varieties at www.OSSeeds.org.

—Margaret Roach



'Cascade Ruby-Gold' flint corn is a stunning Open Source seed variety.

Which Grass-Fed Beef Labels to Trust

If you're trying to buy more grass-fed beef, you may be one of the smart shoppers who knows that meat from grass-fed cattle is higher in key nutrients, including crucial omega-3 fatty acids (learn more about these in Richard Manning's article on Page 45).

Raising cattle on carefully managed pasture will also lead to healthier animals, whose meat is less likely to carry foodborne pathogens. Grass-fed production offers major environmental benefits, too, such as carbon sequestration. (For more on these topics, see "The Many Benefits of Grass-Fed Meat" online at <http://goo.gl/xBD3ek>.)

But labels can be misleading. Here are the verified, meaningful labels to look for to ensure your beef is from cattle that were grass-fed from birth to slaughter:

- **American Grassfed Association:** Certifies producers using independent auditors; www.AmericanGrassfed.org.
- **Food Alliance Certified Grassfed:** Also uses third-party verification; www.FoodAlliance.org.
- **U.S. Department of Agriculture Grassfed + USDA Process Verified:** The USDA or a contracted independent auditor has verified compliance; <http://goo.gl/3DeqW4>.



Look for one of these four labels on your beef to verify it's from cattle raised wholly on pasture.

- **Animal Welfare Approved Certified Grassfed:** Also includes certification of a range of environmental and animal welfare standards; www.AnimalWelfareApproved.org.

Aside from those above, some product labels may not deliver what you think they're promising. A Consumers Union Web-based initiative, available at www.GreenerChoices.org, reports that the general term "grass-fed" can be (and is) used on products from animals even if they spent the last months of their lives eating grain in concentrated animal feed-

ing operations (CAFOs). Most beef calves are raised on pasture until they're moved to feedlots when they're about a year old, meaning they may have been "grass-fed" for a portion of their lives, but were not "grass-finished," a term for cattle raised on pasture up until slaughter. The word "natural" offers even less information. According to the USDA, meat can display the "natural" label as long as it contains no artificial ingredients or added color; it doesn't provide any assurances on how the animal was raised or what it was fed.

Furthermore, the USDA's national organic standards allow a "Certified Organic" label on beef even if the cattle was finished on grain in a feedlot. "Certified Naturally Grown," a label offered by an independent organization, only requires that animals graze on pasture for 120 days per year. The "Global Animal Partnership Step 4" label permits producers to remove cattle from pasture for up to a quarter of each animal's life.

Your best bet: Get to know your local ranchers. You won't need to worry about labels if you confirm firsthand the management practices of the people who raise your food.

—Robin Mather

A Book for Serious Tool Lovers

Kevin Kelly's comprehensive, 470-page *Cool Tools: A Catalog of Possibilities* echoes the classic 1970s *Whole Earth Catalog*, which Kelly helped edit. If you've ever spent time with the *Whole Earth Catalog*, you know how hard it is to put down. *Cool Tools* is the same way—the 11-by-14-inch pages are packed with all kinds of surprises, innovative products and ideas.

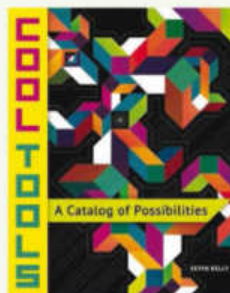
Kelly describes a cool tool as "anything useful that increases learning, empowers individuals, does work that matters, and is either the best, or the cheapest, or the only thing that works." For Kelly, who served as executive editor at *Wired*, this definition includes a wide array of items, from hand tools and maps to software and magazines. His review of *MOTHER EARTH NEWS* concludes: "Why I subscribe: Most magazines are about consuming. This one is about producing."

The book started out as a gift for his children. Kelly explains, "I wanted to give my three kids a box of tools when they left home. The principal item I decided to include was a book—a book pointing to all the great tools beyond the box."

More than 1,500 entries are organized into a broad spectrum of topics, from "homestead" to "storytelling," and each

item is reviewed by at least one expert who has used it extensively and is knowledgeable about the tasks to which it is suited. Worried that Zip Kicker adhesive won't hold? Read the testimony by special-effects engineer Adam Savage and fret no more. Want to know how to edit a feature-length film? Pining for a new pressure cooker? Hankering to build a *tagelharpa*? This incredibly cool book, which is available on Page 64, has you covered.

—Alec Weaver





Powered completely by the sun, the innovative Solar Impulse 2 airplane is in the midst of a historic journey.

Solar Takes to the Skies

You may think the age of aviation firsts has flown by, with renowned trips and famous failures firmly in the books. But now the Solar Impulse 2, a totally solar-powered airplane that's been in the works for more than a decade, is reaching new heights with its historic, fossil-fuel-free flight around the world.

Prior to this journey, a prototype, Solar Impulse 1, successfully flew across Europe, Morocco and the United States to test the technology. With each landing, the pilots and team, which are based in Switzerland, reached out to NGOs, universities and schools to promote clean technologies. The team then progressed to Solar Impulse 2, constructed of carbon fiber and boasting a 72-meter wingspan outfitted with 17,000 solar cells.

The solar-powered airplane embarked from the United Arab Emirates on March 9, 2015, with a route that included stops in Oman, India, Myanmar, China and Hawaii. The plane can fly even after the sun sets by tapping into the power stored in its lithium batteries.

While in transit across the Pacific Ocean, the plane's batteries began to overheat, so it stopped in Hawaii to undergo repairs. The next leg of the flight, which will take them across the United States and over the Atlantic Ocean, is on hold until spring 2016.

Pilots Bertrand Piccard and André Borschberg set out to demonstrate that we can innovate with alternative energies—in this case, solar power—to achieve the “impossible” while sustainably maintaining some aspects of our modern-day lifestyles. Currently, air travel in the United States alone generates 146.5 million metric tons of greenhouse gases per year, so bringing renewables to this transportation sector could have a significant, positive impact.

You can keep up with the plane's innovative strides—and the challenges it's faced along its journey—online at www.SolarImpulse.com.

—Amanda Sorell

Cottage Food Laws

Want to sell your homemade food but worry that the law won't let you? Check out www.Forrager.com, an online clearinghouse for information on how home cooks and bakers can have their cake and sell it, too. Forrager focuses on “cottage food”: salable fare that's been processed in a household kitchen. Staying on top of cottage food laws in the United States is challenging because the rules regarding the types of products allowed, acceptable sale venues (such as farmers markets), and required labeling vary greatly from state to state. A basic Forrager membership is free and includes access to state forums where entrepreneurs can share start-up hints, tax advice and much more. Forrager members can also connect with customers by plotting their businesses on an interactive U.S. map. Click on any map marker to learn about that business, and click on any state for a rundown of its cottage food laws.

—Rebecca Martin

Craftsman Clothespins

When I was a child, I often had to help hang clothes out to dry. Heavy blankets and coats actually stayed on the line—held in place with sturdy, wooden clothespins—even on the windiest days. These days, we've accepted cheap, imported junk, and inferior goods have overcome our homesteads. One craftsman bucking that trend is 25-year-veteran woodworker Herrick Kimball in upstate New York, who tinkered with several prototypes to come up with his Classic American Clothespin design. I've tested these beautiful pins, made with stainless steel springs and American ash



hardwood, and I've been amazed. Kimball hopes to revive the manufacture of quality clothespins via small-scale, community-based production. “I would love to see a network of craftspeople all across the nation, supplying the market demand for high-quality clothespins in their area,” he says. To learn more or to order pins, go to www.ClassicAmericanClothespins.blogspot.com.

—Linda Holliday

Livin' la Vida Little

As the tiny homes movement has picked up traction, dreamy stories of such a lifestyle's ease and freedom have become abundant. But can it really be so easy? The recently released documentary *Small Is Beautiful* follows four people as they put their visions of downsizing to the test—but the film refuses to simply scratch the surface and rehash romantic notions of living minimally. By offering a peek into each person's past, personality and process, viewers gain deeper insight into a range of emotions and experiences that can prompt individuals to not only opt to live small, but commit to constructing their own shelter, too. The documentary's subjects have little to no prior building experience, but

through a combination of circumstance and sweat, they're able to put down pint-sized roots. Revelations about what they've gained and what they've lost arise for each of them along the way, and they all find that communication and community are critical for achieving

their tiny home dreams. This mix of idealism and healthy realism make for an inspiring, down-to-earth documentary. Watch it online at www.SmallBeautifulMovie.com.

—Amanda Sorell



BRIGHT BITES

*Growing Arugula and
Turnips for the Table*



Grow crisp turnips and arugula in cool-season gardens and pair their peppery flavors in your kitchen.

Story and photos
by Barbara Damrosch

Cooking from the garden brings so much pleasure that it's a shame to give it up when winter comes. Luckily, folks in mild climates don't have to, and now even Northern gardeners can put homegrown produce on the table 12 months of the year.

In part, that's thanks to season-extending structures, such as cold frames,

plastic-covered hoop tunnels and simple greenhouses. But year-round harvests are also a matter of choosing the right crops—ones that prefer winter's bite to summer's heat. Doing so means you'll use lots of fresh greens and roots—not just from the root cellar, but pulled right out of the ground.

Two brassica crops that are strikingly superior when grown at lower temperatures are turnips and arugula, which also pair well in the kitchen.

Tune In to Salad Turnips

When you think of turnips, you likely imagine the earthy storage kinds, such as the standard purple-top types and the strong-flavored rutabagas (sometimes called “yellow turnips”). If these are the only turnips you know, you're missing out.

Round, white Japanese salad turnips are so mild and sweet when grown in cool months that it's hard to believe they're turnips at all. Two of the more





Creamy Turnip Soup

This simple, cold-weather soup is best served hot, but it also satisfies when consumed cold the next day, as a winter vichyssoise with turnips instead of spuds. Mild Japanese turnips benefit from a little flavor boost, so I add onion, cardamom and medium-hot pepper flakes to the soup. This is a good way to enjoy salad turnips that are too large to fancy eating raw.

If you pull turnips from a greenhouse or cold frame, include the green tops as well. You can simmer and purée them along with the soup, which will turn it a pale green color. But at Christmas, I drizzle the puréed turnip greens atop the soup along with the red pepper flakes for a festive touch. *Yield: 4 to 6 servings.*

Directions: In a large saucepan or Dutch oven, sauté the onions in butter with cardamom and salt for about 5 minutes, until they're softened but not browned. Pour in the chicken broth and 1/2 cup of water and bring to a boil. Add the turnips, cover, and simmer on medium-low heat for 15 to 20 minutes, until they're tender when pricked with a fork. Purée in batches with a blender, food processor, food mill or immersion blender. Return turnips to pan and add cream.

While the turnips are cooking, combine the turnip greens with 1/2 cup of water in a small saucepan and simmer uncovered for 5 minutes, or until the greens are tender and some of the water has evaporated. Purée the greens and return them to the pan. They should be just thick enough to drizzle over the soup, but not watery. Reduce over low heat for 1 to 2 minutes if needed.

When ready to serve, heat the soup to a simmer and then pour into individual bowls. Using a small pitcher or large spoon, dot the surface of each serving with puréed greens. Then, drag the tip of a small knife through the dots in a spiral motion to craft an enchanting pattern akin to branches of greenery. Sprinkle each bowl with pepper flakes and serve right away.

Ingredients

- 1 cup coarsely chopped onions
- 1 tbsp butter
- 1 tsp ground cardamom
- 1/2 tsp salt
- 2 cups chicken broth, preferably homemade
- 1 cup water, divided
- 2 pounds Japanese turnips
- 1/2 cup whipping cream
- 1 cup packed coarsely chopped turnip greens
- 1 tbsp pepper flakes, preferably bright red and medium-hot



Sweet, mild 'Hakurei' salad turnips will turn a negative turnip preconception around.

popular varieties are the open-pollinated 'Shogoin' and the hybrid 'Tokyo Cross.' Although both can grow quite large and still be good for cooking, they're delectable when harvested at golf-ball size. Another satisfying open-pollinated variety is 'Tokyo Market.' My favorite is the hybrid 'Hakurei,' a snowy white turnip. It's so sweet and crisp when picked small that you can eat it raw.

Turnips are a perfect quick spring crop, picked before age and heat turn them woody. Prepare a fertile soil rich in organic matter, and then, as soon as the ground can be worked, sow turnip seed directly in the garden in rows 12 inches apart. Cover the bed with floating row cover at planting time to protect the foliage from flea beetles and the roots from root maggots. Voles also love to gorge on the sweet roots, so you may need to trap them. After the plants are about 4 inches tall, thin them to 3 inches apart, and then toss the thinnings into the next salad you make. From September onward, sow fast-growing turnips in succession for a steady supply. Both roots and greens will be ready to enjoy in as soon as a month after planting. They can handle light frosts, but will need protection against a hard freeze.

Turnips in the Pot

Baby turnips will keep in the fridge for several weeks before they turn pithy. I love having them on hand to toss into stir-fries, salads and rice dishes. In fried rice, they take on the role I used to offer water chestnuts. Add them for only



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Baby Turnip and Arugula Salad

You can make this salad whenever you have baby turnips and arugula, but it will taste best when both crops have grown in cool conditions. They should be young as well—the turnips the size of golf balls and the arugula about 3 inches long. I often make a citrus dressing, sweetened with honey, to balance the arugula's mild heat and the raw turnips' hint of brassica bite. Freshly juice an orange, rather than using packaged juice, so you can garnish the salad with orange zest.

Yield: 4 servings.

Directions: Zest the orange by grating the skin surface with a Microplane, grater or citrus zester. Set zest aside.

To make the dressing, squeeze the juice out of the orange (about 1/4 cup) and combine with the honey in a small saucepan. Reduce over low heat until syrupy. Cool and whisk together with the vinegar and olive oil in a glass or small pitcher.

Scrub the turnips and cut off the tops, tails and any blemishes. Slice thinly crosswise. Remove any long stems from the arugula and drop a handful lightly on each of 4 salad plates. Scatter the turnip slices among the leaves, taking care not to flatten them. Dribble on the dressing (a small squirt bottle works great). Add salt and a little pepper. Using your fingers, add a dusting of the orange zest as a garnish. Serve immediately.

Ingredients

- 1 orange
- 1 tbsp honey
- 1 tbsp sherry vinegar
- 4 tbsp extra-virgin olive oil
- 9 to 12 Japanese turnips, golf-ball-sized or smaller
- 1/4 pound fresh arugula
- Dash of sea salt
- Black pepper



Growing arugula in cooler weather will soften its peppery bite to a pleasing palatability.

the last minute or two of cooking, to preserve their famous crunch. When sautéing baby turnips, avoid crowding the pan to keep their high water content from turning them to soup—hot oil and frequent stirring will do the trick. You can also strew them around a roast during its last 30 to 45 minutes of cooking (depending on the turnips' size) to brown a bit and flavor the meat juices.

Small Japanese turnips rarely need peeling; just give them a quick scrub. I like to leave an inch or so of greens on the tops, even when cooking them, to signal the turnips' freshness. The greens, of course, are a bonus, and 'Hakurei' greens don't have the fuzziness of other varieties. Drop the chopped greens into soups, succotash, or any dish that their healthy touch could improve. Try steaming the roots and greens separately, and then set the roots on a bed of the greens that have been dressed with butter and a wee bit of honey.

Arugula Aficionados

Arugula has made an odd journey from the "rocket" of colonial days to its rediscovery as a gourmet item. Now, it's so mainstream that it turns up on tray tables in airplanes. In Maine, we can grow arugula in summer, but only with floating row covers or in a greenhouse where flea beetles rarely venture. When grown outdoors in fall, arugula tastes fantastic, with much less of the peppery bite that it has when grown in hot weather. When serious cold sets in, it's back to the greenhouse or cold frame.





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Arugula can reach harvestable size in as little as 21 days, so it pays to sow it every few weeks in fertile, well-drained soil, with plants at least an inch apart to prevent bolting. (You can broadcast the seeds and then thin the seedlings accordingly.) On our farm, we grow a heat-resistant salad variety called 'Astro.' For a more winter-hardy arugula, try the so-called "wild arugula" varieties, such as 'Sylvetta,' which are a different species altogether. Wild arugula's flavor is similar to salad arugula's but stronger, and its leaves are a bit darker with deeper lobes. Both are great as cut-and-come-again crops, so you can keep a bed going for a long time by snipping it at 3 inches tall and then letting it regrow. In milder regions (Zones 6 and warmer), wild arugula is a biennial or short-lived perennial.

Arugula in the Salad Bowl

Arugula is an upright green you can often cut and serve without washing. Make sure you trim off long stems, which can be awkward to eat. Arugula will keep for a few days when well-wrapped and chilled, but will deteriorate within a week. It's excellent for perking up lettuce salads or mesclun mixes with its bold, pleasantly hot taste. Dress sparingly, lest it become soggy with oil.

Some people love to cook with arugula, but I find that sturdier greens, such as kale and collards, hang on to their flavors more and hold up better when cooked. I'd rather nibble arugula bunny-style, right after picking. 🐰

Barbara Damrosch farms and writes with her husband, Eliot Coleman, at Four Season Farm in Harborside, Maine, where sturdy bowls of turnip soup chase the chill on cool winter evenings. She is the author of *The Garden Primer* and, with Coleman, *The Four Season Farm Gardener's Cookbook*. Both are available on Page 64.



Arugula Pesto Dip

Pesto, one of Italy's great gifts, is considered a summer dish. Its name comes from the tool with which it's traditionally made, the pestle, used to crush the basil in a mortar along with salt, garlic, olive oil, Parmesan cheese and *pignoli* (pine nuts). Cooks have learned that other greens make tasty pesto recipes, and other nuts can replace *pignoli*. Arugula makes a superb winter pesto. Some people toss it with hot pasta, but I prefer to keep it raw, to retain more flavor. I add pecans for their slight sweetness (they also cost a lot less than *pignoli*), and I roast the garlic, to tone down its flavor. That adds a little sweetness, too.

Dip whatever you like into a bowl of pesto, but thinly sliced, raw baby turnips are a perfect vegetable for the job—as tasty as a cracker, and they don't come in a box with an appetite-shattering list of unpronounceable ingredients. For a more formal event, you might turn this combo into a plate of canapés, laying the turnip slices flat and topping them with a dollop of pesto, but here's the DIY (dip-it-yourself) version for everyday life. *Yield: 6 to 8 servings as an appetizer.*

Directions: Preheat the oven to 400 degrees Fahrenheit. Toast the pecans in a small pan over low heat on the stovetop, stirring often, until fragrant but not browned.

To roast the garlic, slice the head horizontally across the top, leaving it unpeeled and intact. Drizzle 1 tablespoon of oil into the head before wrapping in aluminum foil. Roast for about 45 minutes, or until the garlic has softened. Poke out half the cloves, squeeze the flesh out of the skins, and set aside. Leave the remaining half for another day.

Put pecans in a food processor (a mini-version is perfect for this) and grind until fine. Add the arugula, and pulse the motor while dribbling in the remaining olive oil. Add the roasted garlic, cheese, salt and pepper; pulse briefly; and remove to a small bowl for dipping. (If not for immediate use, refrigerate, and then whisk before serving. It will keep overnight, but is better when used the same day it's made.)

Slice the turnips from top to bottom with a small, sharp knife. If freshly harvested, include a bit of the greens with as many slices as possible. Set the bowl of dip on a plate or platter, and arrange the turnip slices around it. Serve at room temperature.

Ingredients

- 1/3 cup pecans
- 1 head garlic, intact and unpeeled
- 1/3 cup plus 1 tbsp extra-virgin olive oil
- 1 cup packed arugula, coarsely chopped
- 2 ounces (about 1/2 cup) grated Parmesan cheese, preferably *Parmigiano-Reggiano*
- Pinch of coarse sea salt and pepper
- 8 to 12 small baby turnips, trimmed to leave 1 inch green tops



DIG DEEPER!

Need more turnip tips? Learn about turnips and other culinary compadres in our Crop at a Glance Guide at www.MotherEarthNews.com/Crops-At-A-Glance. Find greenhouse kits and supplies, including row covers, at www.MotherEarthNews.com/Greenhouse-Supplies.

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Delicious, Homemade WHOLE-GRAIN FLOURS

By Tabitha Alterman

Invite new flavors, textures and nutrients into your baking adventures by picking out a home mill and grinding a range of grains into super-fresh flours.

Cooking and baking with whole grains is a healthful choice that brings a much wider range of nutrients to meals than opting for refined flours or processed goods. And “whole-grain flour” doesn’t have to only mean “wheat flour.” A variety of grains and grain-like seeds are available for bakers, each with its own special qualities and flavors—and you can grind them in your own mill right at home for exceptionally nutritious, fresh flours customized to your taste buds and recipes. Plus, with today’s modern mills, grinding grain is no longer slow, tedious work—you can go from grain to dough in a matter of minutes.



Why Make Homemade Flour?

Flavor. The No. 1 reason to mill your own flour is flavor, which can be equated with freshness. The moment after grains become flour is the moment of the flour's maximum flavor potential, after which it begins to go rancid and lose nutrients and flavor components.

Variety. Buckwheat tastes nothing like wheat—and you can use this to your advantage. Bake with buckwheat when you're craving earthy flavor. Swap in fresh cornmeal when you want to impart some sweetness. Add some oat flour to lend extra tenderness, and use barley flour when you want some nuttiness. The easiest and best way to get this range of flavors and attributes is to grind your own grains, and try an array of whole-grain recipes and baking projects.

Control. By milling flour at home, you can custom-blend exactly the mix you want, without needing to buy and find room for several different bags of flour. Home milling affords control over texture, too. With a good grain mill, you can turn any grain into a fine, medium or coarse flour to suit your needs.

Cost. Whole grains are less expensive than flours. Depending on the price you pay for unmilled grains, you can easily make homemade loaves of bread for less than a buck each.

Convenience. When did people decide shelf life was the prime virtue? I don't choose ripe tomatoes or fresh fish thinking those items will last forever in my kitchen. Yet we've been trained to think flour should last a long time, when it really shouldn't. Unmilled grains, on the other hand, can keep well for years, making them more convenient to stock and then grind as needed.

Nutrition. Most people don't realize that store-bought flours have been made from grains that have had their germ and bran removed to increase shelf life, a process that also drastically reduces the nutrition of the end product. You need to grind the entire kernel to realize the full nutritional potential of your flours.

Whole Grains Glossary

Barley was once the main bread grain in Europe. Barley comes "hulled" (meaning its inedible outer hull has been removed), "hull-less" (meaning a particular variety doesn't produce an outer hull), and "pearled" (meaning the hull and much of the nutritious bran have been removed, so don't opt for this type).

Barley is creamy, rich and nutty with a complex, malty sweetness that has a slightly tart backbone. It plays nicely with many sweet and savory ingredients. It has a tenderizing effect on baked goods, and its flavor is mild enough that most won't notice if it has replaced some wheat flour in a recipe.

Buckwheat behaves like a grain but is actually a seed. Triangular buckwheat groats are often toasted and sold as kasha, or toasted



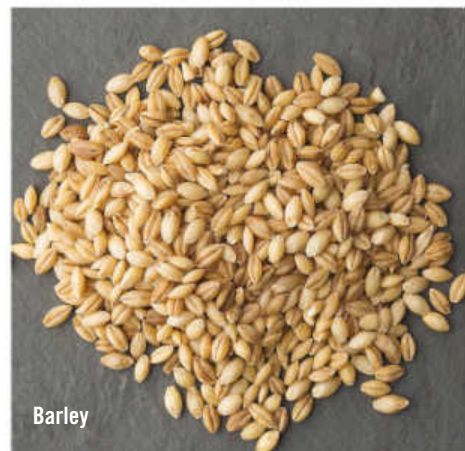
Whole grains will store well for years, which will allow you to grind fresh flour anytime.

and cracked and sold as buckwheat grits. The groats will already be hulled, as the brittle hulls would be hard to remove at home.

Buckwheat has a strong flavor one might describe as earthy, savory or umami. Most people either love it or hate it. Pair buckwheat with other assertive flavors, or balance it with a strong-flavored sweetener, such as molasses. The unmistakable flavor of buckwheat is best when freshly ground. It can get gummy, so be careful not to overcook it when preparing porridge. A long, slow rise will help mellow buckwheat's flavor in breads.

Corn classification is tricky. Cornmeal, made from popcorn or whole kernels of dried grain corn, can be ground into varying degrees of coarseness, with fine corn flour at one end of the spectrum and coarse polenta at the other. If one kind is too coarse for your purpose, give it a spin in a food processor before use. Corn can be processed into hominy, which has had its hull removed. If hominy is dried and then finely ground, it's called *masa harina*. If hominy is coarsely ground, it's sometimes called hominy grits.

What you're looking for in baking is corn's sweet undertone. The best way to get this desirable flavor—and there are no



exceptions—is to grind your own fresh cornmeal, the *crème de la crème* of homemade grain products. Seek out heirloom corns that are known to be especially flavorful.

Oats, when chopped, are called steel-cut oats, Irish oats or Scottish oats. Whole oats are called groats. Most people are familiar with rolled oats or old-fashioned oats, which have been pressed into flakes. Quick oats are pressed even thinner, and don't retain their shape when cooked.

Oats are mild and nutty. Their flavor often recedes into the background. They're moisture-loving, tenderizing and thickening, and they have a chewy, creamy quality that comes through in baked goods. Oats can create various textures: Left whole, rolled oats can add chewiness or crunchiness, depending on how long they're cooked. Chop them in a food processor, and you'll have the familiar texture of your grandma's oatmeal cookies. Pulverize them completely, and you'll have moist, fine-textured oat flour.

Rice sold in the United States is typically highly refined white rice that has had much of its nutrition polished off. Brown rice (and other colored varieties), on the other hand, is whole in the same way wheat can be whole—it still contains its fiber-rich bran and germ.

Brown rice is nutty and mild, making it versatile. Different varieties have subtle flavor differences. Flour from short-grain sweet rice makes stickier batters and doughs than long-grain rice flours—and, thus, fluffier, spongier baked goods. All rice flours lend a somewhat sandy quality to baked goods.

Rye is most often associated with northern and eastern Europe, where it is the stuff of bread legend. When browsing the bread aisle, you'll find light, medium and dark rye, as well as pumpernickel, which is whole-grain dark rye. Light rye tastes like a lot of nothing, because it contains none of its flavor-rich bran. Medium rye

(and sometimes dark rye) has also had some of its bran removed. If you grind rye berries at home, you'll have whole pumpernickel rye—and you won't be sorry. Rye is able to absorb a ton of water, and this extra moisture in rye breads leads to longer keeping quality and an ability to make you feel fuller than other breads do.

Rye has a heavy, sweet flavor that is part grassy, part fruity. Many people who think they hate the flavor of rye have never had rye bread made with fresh flour, or they may be confusing it with the flavor of caraway seed or sourdough because those ingredients are so often paired. On its own, rye is surprisingly sweet.

Wheat classification is somewhat complicated. Wheat flour

can be categorized by protein content: Whole-wheat flour most often refers to flour ground from hard red or hard white wheat that's high in protein. Either of these could be spring wheat (planted in spring and harvested in summer) or winter wheat (planted in fall and harvested in spring). High-protein wheat is ideal for breads; spring wheat has the highest levels. Whole-wheat pastry flour refers to a lower-protein wheat, also known as soft wheat, which is best for cookies, cakes and pastries.

Whole wheat can also be classified based on how it's processed: Whole-wheat flour is ground from the entire wheat berry. Graham flour is made of coarsely ground wheat berries. Cracked wheat refers

to wheat that has been chopped, similar to steel-cut oats. Bulgur wheat refers to wheat berries that have been steamed, dried and cracked. Wheat flakes have been pressed from whole berries, similar to rolled oats. The most nutritious parts of the wheat berry—the wheat bran and wheat germ—can be mechanically removed from the berry in factories, and then sold separately to add texture and nutrients to baked goods. If you use whole-wheat, home-ground flour, you'll get all the bran and germ.



Grinding your own grains at home opens up a world of baking possibilities. Experimenting with new flavors—from sweet and mild to earthy and bold—is bound to make for a boredom-free kitchen.

Finally, wheat can be sorted by plant variety. Durum is an especially hard variety that's usually ground into coarse semolina (after the nutritious bran and germ have been removed). Semolina is sometimes made into couscous. Durum's combination of high protein and low gluten is perfect for pasta and pizza. You can grind whole berries into nutritious flour that's much silkier than commercially available semolina, or into a medium-coarse flour similar to refined semolina.

Ancient varieties of wheat that are the progenitors of modern wheat are becoming more popular and more widely available. These include einkorn, emmer and spelt, which are often confused for one another. The reason these may have fallen out of favor over the past hundred years is that they have a hull that's difficult to remove, which makes them more expensive to produce.

Khorasan (also known as Kamut, a brand name for organically grown Khorasan wheat developed by an organic farm in Montana) is related to durum, but it's higher in protein. Its gluten is reported to be more tolerable to some people with gluten sensitivity.

In terms of flavor, whole wheat is sweet and nutty, and goes well with a wide range of ingredients. It often has a touch of



Move well beyond wheat: Try buckwheat biscuits drizzled with honey mustard (above) or a flavor-packed loaf of barley beer bread (below).

tannic bitterness, but this sharpness is virtually absent in freshly ground wheat, and can be easily balanced in recipes with the addition of a bit of orange juice. Durum tastes like wheat with a deeper, nuttier character. Einkorn has a mild flavor similar to regular wheat. Emmer is sweeter and chewier than other wheats. Spelt is nutty, sweet and milder than other wheats, with none of their bitterness. Khorasan is buttery and sweeter than other wheats.

For breads, use regular whole-wheat flour from high-protein hard wheat, or try flour ground from durum, spelt or Khorasan. For cakes, cookies, moist breads and pastries, use whole-wheat pastry flour made from soft wheat, or try one of the ancient wheats, especially einkorn. For pizza and pasta, durum flour is excellent for its golden color and chewy quality. If you're after a sandy quality, as in graham crackers, go with graham flour. For its extra nutrition and deeper flavor, einkorn can replace some wheat flour in breads, but will not help as much with rise. It needs plenty of time to absorb liquids and can sometimes use a little extra moisture. Emmer has a somewhat coarse texture, even when finely ground. Give spelt batter or dough plenty of time to absorb moisture and reduce liquid somewhat—add more as needed after it has had a chance to rest. Spelt has the ability to make more





Get your grind on with a home mill, such as the KoMo mill (left), a milling attachment for your KitchenAid mixer (center), or the GrainMaker No. 99 (right).

gluten than regular wheat, but it's also more fragile. Be careful not to over-knead. Combining spelt with regular wheat is a good idea if your dough will ferment through a long, slow rise. Khorasan has more and stronger gluten than regular wheat. It makes amazingly tall, 100 percent whole-grain breads.

Choosing a Grain Mill

A handful of multipurpose, small kitchen appliances can grind whole-grain flour. You can use a coffee grinder, food processor, high-powered blender (such as a Blendtec or Vitamix), or KitchenAid attachment. These aren't the ideal grain grinders if you'll be making flour or cornmeal a heckuva lot, but they'll offer a nice compromise if it's something you'll do occasionally.

If you're ready to spring for a dedicated grain mill, many options are on the market, ranging in price from \$50 to more than a grand. Some grain mills are hand-operated, and mills are also

classified based on how they crush grain: with either a burr or impact plates. A burr mill crushes grains between two plates into various degrees of coarseness. If flour or cornmeal has been "stone ground," that means it was produced in a burr mill in which the plates were made of real stone. Burr mills grind slightly more slowly than impact mills—usually just enough to prevent an undesirable amount of heat from ruining the flour's nutrients and gluten. Durable, well-made electric burr mills include Family Grain Mill (\$280), KoMo/Wolfgang (\$440 to \$600), and Golden Grain Grinder (\$600).

High-quality hand-crank burr mills include Victoria (formerly called "Corona," \$50), Victorio/Back to Basics (\$80), Family Grain Mill (\$150), Schnitzer Country Mill (\$350), Country Living Grain Mill (\$430), GrainMaker Grain Mill No. 99 (\$675) and No. 116 (\$1,200), and the wildly popular and well-made Diamant (\$999), which has been rated by Lehman's (www.Lehmans.com) as the finest grain mill available today. Many of these are convertible to electric power with separate attachments (not included in these prices), and also offer flywheel attachments to make manual grinding easier. With the help of a kit, some mills, including those from GrainMaker, can be converted to pedal-powered machines (see one in action at <http://goo.gl/WFD2pC>).

In an impact mill, two interlocking cylinders spin within one another while grains pass through. These don't always make the best flour. On the other hand, they're inexpensive compared with burr mills. The most popular electric impact mills include Blendtec Kitchen Mill (\$180), WonderMill Grain Mill (\$270), and Nutrimill (\$250). 🌾

SOURCES

Check your local farmers market, natural grocer, Local Harvest (www.LocalHarvest.org), or the following mail-order sources to find quality whole grains.

Bluebird Grain Farms: www.BluebirdGrainFarms.com

Bob's Red Mill: www.BobsRedMill.com

Greenwillow Grains: www.GreenwillowGrains.com

King Arthur Flour: www.KingArthurFlour.com

Marias River Farms: www.MariasRiverFarms.com

Pleasant Hill Grain: www.PleasantHillGrain.com

Urban Homemaker: www.UrbanHomemaker.com

Wheat Montana Farms: www.WheatMontana.com; carries 'Prairie Gold' and 'Bronze Chief,' two wheat varieties selected for superior protein content.

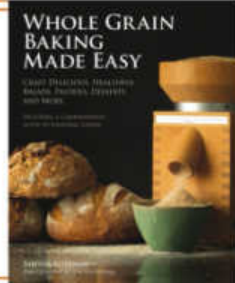
WHOLE-GRAIN RECIPES

Whole Grain Baking Made Easy by Tabitha Alterman

King Arthur Flour Whole Grain Baking cookbook

"Homemade Bread-Baking Guide": <http://goo.gl/u7p7WE>

This article was adapted with permission from *Whole Grain Baking Made Easy* by Tabitha Alterman (Voyageur Press). This book, available on Page 64, is packed with both basic and creative recipes that will inspire you to bring more whole grains into your kitchen.



FREEZE DRY AT HOME

Avid Chef Shares Her Best Kept Secret

Sharon Woolsey isn't afraid to experiment in the kitchen. Her two years in South America made her an adventurous chef; and, her husband and three children motivate her to cook healthy meals that everyone will enjoy.

Sharon is a hardworking mom trying to balance home management, part-time work, church and community involvement, and everything else.

"Of all the interesting, and innovative appliances I've worked with, this was possibly the most amazing, the most interesting, and the most innovative," Sharon said after her first few months with the Harvest Right freeze dryer.

This convenient freeze dryer is about the size of a mini-fridge and can be used in a variety of locations such as a kitchen, spare room, laundry room, or even a garage. Sharon keeps her freeze dryer in her garage during the winter and brings it into her food storage closet during the hot summer months.

This appliance is a game changer for a lot of reasons. It can freeze dry 6 to 10 pounds of food at a time, which amounts to 1,500 pounds of food per year. When stored properly, freeze-dried foods can last for 15 to 25 years, making it an essential tool for anyone who practices food storage like Sharon.

Freeze drying leaves the nutritional integrity, as well as the taste and

appearance, of the food completely intact. A grape still looks like a grape; a slice of peach still looks as fresh as it did before it was freeze dried; meats and seafood stay fresh and taste fresh even after being freeze dried. Whether freeze drying full meals like lasagna and beef stew or preserving dairy products like cheddar cheese, yogurt and ice cream, Sharon has the confidence that the food is going to taste great.

Besides preserving meals as long term storage for her family and making delicious baked goods, Sharon has also found her freeze dryer useful in preserving her garden bounty. Like many avid gardeners, Sharon saw her food going to waste because she couldn't use the produce fast enough. Now, she has a solution that keeps her goods fresh until she's ready to use them.

"[I love to preserve] my fresh produce in the freeze dryer because it plumps back to life so beautifully. It's also the absolute best way to preserve herbs, especially as they retain 100 percent of their flavor."

Produce from the garden isn't all a freeze dryer can save from going to waste. Leftover meals and ripening grocery-store produce stay out of the trash can thanks to the freeze dryer. With foods that ripen quickly, like bananas or avocados, the Harvest Right freeze dryer can preserve them in their prime. Sharon noted that her Harvest

Right freeze dryer is "a game changer" for her beautifully preserved avocados.



Harvest Right Freeze Dryers are easy to use, affordable, and preserve large batches of food within 24 to 36 hours.

The ability to keep food from going bad helps offset the price tag, Sharon said. Families throw out \$2,250 worth of food a year on average. That number alone almost pays for the freeze dryer. It is perfect to freeze dry food that would otherwise go to waste so that it can be used as a meal in a few weeks or to be eaten in 25 years.

Freeze dried pineapple, grapes and yogurt drops have replaced Sharon's kid's favorite candy. She turns freeze-dried kale and Greek yogurt into powder to add to her morning smoothies; and freeze-dried ice cream dipped in chocolate has become a popular treat at her house parties. Sharon has found a way to turn this remarkable food storage technique into a way of life.

Learn more about this revolutionary appliance at HarvestRight.com or call 1-800-974-9540.

Circle #18; see card pg 81



Les Jardins de la Grelinette
is the author's thriving
1.5-acre market garden in
Saint-Armand, Quebec.

Anyone Can MAKE A LIVING ON 1.5 ACRES

Learn from these seasoned market farmers and grow your own fulfilling farming career on less acreage than you ever thought possible.

By Jean-Martin Fortier

Many people believe that a small-scale market garden can't compete economically with larger industrial growers. For more than a decade, however, my wife and I have supported our four-person family solely by intensively farming 1.5 acres. We offer our experience here as a road map to help you start your own successful market farm.

We began our farming careers as “WWOOFers” (volunteers with World

Wide Opportunities on Organic Farms), and later worked as farm managers on someone else's market farm. After we spent some time learning abroad, we came home to Quebec to pursue our own farming project. We started small by growing produce on one-fifth of an acre and by living simply—in a tipi! After a few years, we longed to put down roots in the community and expand our farm, but we needed to generate income. To make payments on a small plot, fund the construction of a modest home, and cover the

expenses that surround a growing family and business, we made a decision that might sound contradictory to economic growth: we decided to stay small.

We wanted to continue relying on inexpensive hand tools and light power tools. We even named our farm *Les Jardins de la Grelinette* after *la grelinette* (“broadfork”), a tool that epitomizes efficient hand labor in organic gardening. We've always believed that it's possible—even preferable—to intensify production through smart gardening



Jean-Martin and his wife, Maude-Hélène, tend their 1.5-acre farm with the help of hand tools, including this innovative, six-row seeder.

techniques. Our motto became “Grow better instead of bigger.”

A Biologically Intensive Approach

We began by investing in a large quantity of organic matter to create rich, living soil. We continue to add compost regularly, while restricting the tilling of the soil to the surface. This method keeps the soil’s structure as intact as possible. By improving the soil’s structure, we’ve been able to sow crops close together, resulting in higher yields and reduced weed growth.

We further maximized our growing space by planting as many succession crops as possible. To make a crop-rotation plan, we had to first determine the length of time each crop would spend in the

garden, and then schedule our plantings so we could replace harvested crops with new plants or seeds as soon as possible. With our crop-rotation plan in hand, we succeeded in producing multiple harvests from the same permanent garden beds.

No Need for a Large Mechanical Steed

We wanted to avoid the investment necessary for maintaining a large, four-wheeled tractor, so we rely on a small-but-mighty walk-behind tractor with multiple detachable implements. Learn about two-wheeled tractor options at <http://goo.gl/fY8jkS>.

The soil’s integrity is our top priority, so we’ve opted for a rotary-power harrow (shown below), which stirs and prepares the topsoil for planting while retaining

the vitality of the bed’s subsoil. We also use a “tilther” —a clever tool powered by an electric drill that does a great job of mixing amendments into the soil (available at www.JohnnySeeds.com). All of our tools, including row covers and two-wheel tractor implements, are sized to work efficiently in our uniform, permanent beds, which are all 30 inches wide by 100 feet long, with 18 inches between each bed.

Weeding can be extremely time-consuming, so to discourage weed growth, smother crop debris and dedicate our time elsewhere, we cover the soil with black plastic mulch. UV-resistant, black polyethylene tarps do an especially good job of diminishing pesky weed pressure. The explanation is simple: Weeds germinate in the warm, moist conditions created

ALEX CHABOT (2); TOP RIGHT: CLARISSE LE GARDIEN



Walk-behind tractors are the middle ground between efficient hand tools and large, four-wheeled tractors.

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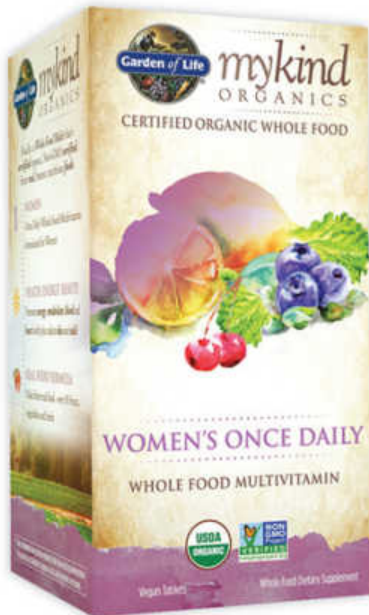
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by the tarp, but are then killed by the absence of light. This weeding technique is called “occultation,” and it saves us *a lot* of work. The great thing about these methods is that they’re relatively inexpensive, especially when compared with the large equipment and expensive chemical inputs used in traditional farming setups.

Kick Out the Middleman

Direct selling via farmers markets and community-supported agriculture (CSA) programs allows market farming to be a financially successful career choice in today’s economy. These expanding avenues for direct producer-to-consumer sales allow growers to recover the large portion of profit that’s traditionally scooped up by distributors and wholesalers. For example, most grocery stores take a cut of between 35 and 50 percent of an item’s selling price. The distributor, who transports and handles the product, takes another 15 to 25 percent. This means that salad greens sold for \$2 in a store will only bring the vegetable grower about 75 cents. That’s a big loss! Market farmers, on the other hand, can receive all the profit for their product if they’re willing to put forth their own time and effort on marketing, sales and distribution.

At *Les Jardins de la Grelinette*, we favor the CSA model because it guarantees sales

Advantages of the CSA Model

- **Guaranteed sales.** The main advantage of the community-supported agriculture (CSA) model is that production is prepaid at the start of the season, often before the first seed has even been sown. This model allows the farmer to budget with greater precision.
- **Simpler production plans.** Because members have already purchased the produce, the farmer can plan production based on sales. After determining the number of customers, the farmer can plan the contents of each delivery beforehand. This is even more important for growers who don’t yet have much farming experience to base their year on.
- **Risk sharing.** The idea behind CSA programs is that the risks inherent to agriculture are shared between the farmer and the members. When members sign up, they authorize a contract inviting them to be tolerant in case of hail, drought or any other natural catastrophe. If the season is good, the members will receive more than planned, but if the season is bad, they’ll receive less. For the farmer, it’s similar to taking out an insurance plan on the harvest.
- **Customer loyalty.** CSA models allow farmers to build customer loyalty and tangible relationships between consumers and the farm. Many of our members have been buying vegetables from us for many years now. These people know us, they’ve come out to visit the farm, and they greatly appreciate the work we do. As its name suggests, community-supported agriculture really does have the power to build community.

and simplifies our production plan (see “Advantages of the CSA Model,” above). Last year, we sold 46 percent of our produce to our 140-member CSA program; 44 percent at two farmers markets; and the remaining 10 percent, which was mesclun mix, to a few local restaurants and a nearby grocery store. We peddled produce to approximately 250 families. Don’t forget, we live in Quebec, where the growing season is shorter than most

U.S. regions, despite our application of season-extending techniques. If you live in a warmer climate, you should be able to sell even more.

Whether you choose to use a CSA model, farmers markets or a combination of avenues, direct selling builds a loyal customer base and develops interdependent relationships with clients. This can take a few years, and you can’t overlook two key components: quality

Start-Up Costs

Greenhouse (25' x 100')	\$11,000
2-wheeled tractor and accessories	\$8,500
2 hoop houses (15' x 100')	\$7,000
Cold room	\$4,000
Irrigation system	\$3,000
Furnace	\$1,150
Flame weeder	\$600
Indoor seeding equipment	\$600
Hoes and wheel hoe	\$600
Floating row cover, insect netting and hoops	\$600
Electric fencing	\$500
Harvest cart	\$350
Seeders	\$300
Harvest baskets and scales	\$300
Broadfork	\$200
Rakes, shovels, spades, wheelbarrow	\$200
Sprayer	\$100
Total	\$39,000

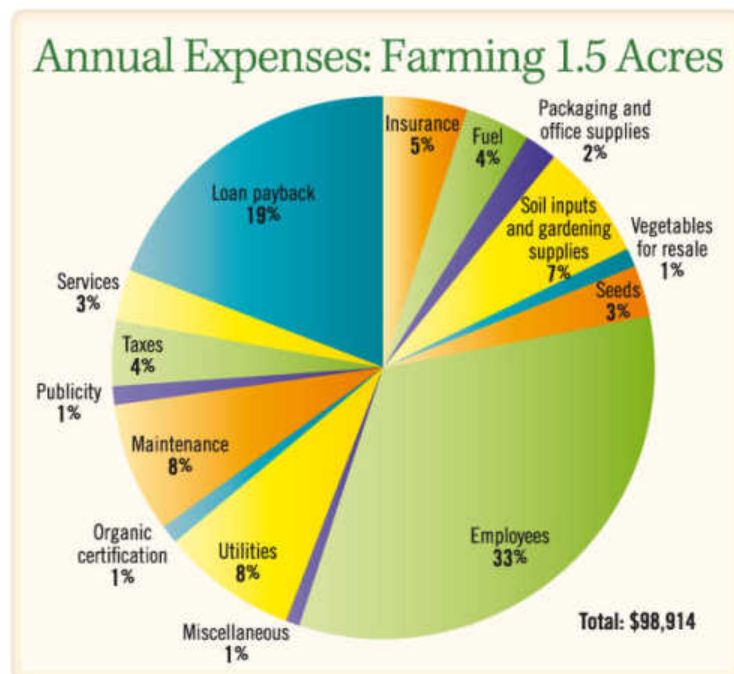


Because CSA program members invest in produce at the beginning of the year, market farmers can create ultra-efficient production plans and budgets.

and presence. When it comes to customer loyalty, quality of the product is vital. Always wash and neatly display your vegetables. Be present at market stands and CSA program drop-off points. Bigger, mechanized, faceless operations will never be able to compete with you if you're producing top-quality produce and consistently showing up to form an ongoing, positive relationship with your customers.

Small Can Be Profitable

Market gardening provides the opportunity to get started little by little. In our first year of production—on less than one-fifth of an acre of rented land—we sold \$20,000 worth of produce. The following year, our sales more than doubled to \$55,000. In our third growing season, we invested in new tools and settled on our current farm site. By increasing our amount of cultivated land to 1.5 acres, we increased our gross sales to \$80,000. When our sales broke the \$100,000 mark the following year, our micro-farm reached a level of production and financial success that most people in the



Compared with the potential revenue of an intensively managed market garden, these payments were entirely manageable. Plus, this figure is much less than the costs for an industrial farm on hundreds of acres.

Of course, this initial investment wasn't our only business expense. It doesn't include certain necessities, such as a reliable delivery vehicle, land rental or purchase fees, or utilities. As you can see

from the pie chart above, 19 percent of our annual budget is allocated to paying back our loan. The largest portion (33 percent) goes toward paying our two full-time employees. After those two large cuts, we spend the remaining 48 percent of our budget on utilities, insurance, fuel, seeds, soil inputs, packing and promotional materials, and other miscellaneous necessities. All in all, last year's production expenses added up to \$98,914.

For us, \$39,000 was enough to provide all the tools and equipment we needed to start a small-scale market garden, including one greenhouse, two hoop houses, irrigation equipment, a walk-behind tractor with implements, a cold room for vegetable storage, and more (see "Start-Up Costs" on Page 31 for a full list of equipment). This may sound like a lot of money, but consider that a bank loan of \$39,000, spread out over five years at 8 percent interest per year, meant that our annual payments were about \$9,500.

This may sound intimidating, but before you back out, know that our revenue last year was \$154,386, for a net income of \$55,472. My wife and I have been able to support our four-person family with that level of income—plus, we're our own bosses, live a life that's connected to the Earth and the food we produce, eat really fresh, healthy fare, *and* have winters off. We're not getting rich, but we believe our work is honorable, and we're living the life we set out to create.

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The author's heated greenhouse is dedicated entirely to trellised tomatoes, a profitable crop.

Jean-Martin Fortier is a broadfork-wielding market farmer from Quebec, and the award-winning author of *The Market Gardener* (available on Page 64 at a 25 percent discount until Jan. 30, 2016). He is featured in the upcoming documentary *The Market Gardener's Toolkit*, which will premiere in May 2016. Watch the trailer at www.PossibleMedia.org/MarketGardener.

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This page:
Study in Purples

At right:
'Stump of the World' Tomato
Tender Eggplants
'Tango' Celery

Elevate the Harvest THE BEAUTY OF VEGETABLES

Lynn Karlin's vision is palpable in these striking portraits: Honor the vegetable.

Photos by Lynn Karlin

Text by Laura Dell-Haro

Gardeners are inspired to grow their own vegetables for a variety of reasons: food purity, food security, family and cultural traditions, fresh flavors, stress relief, improved nutrition, and many more. Our tomatoes grow sweet with lip-smacking flavor, but also heavy with intent and purpose.

Certainly, identifying your own incentives is critical to making it through the darkness of winter, flush of spring weeds, and stifling summer heat to, ultimately, the bounty of the harvest season. In the elegant portraits presented on these pages,

photographer Lynn Karlin brings an oft-overlooked motivation to light: reverence for beauty.

These works are part of "The Pedestal Series," in which Karlin, quite literally, elevates the harvest. With an eye attuned to elegance where most people see utility, she ratifies the radish and champions the cabbage.

The project started with a rather innocent (but much maligned) vegetable: cauliflower. "Most people don't really look at, or see beauty in, vegetables," Karlin says. "At the local farmers market, I became entranced by a purple cauliflower still encased in its stalks and leaves. I brought it home, placed it up high on a white

pedestal by an east-facing window, and photographed it."

Karlin's models are unique—and not only because of their species. She seldom retouches the produce. "I photograph the vegetables as soon as I get back to the studio. They are as I found them—hours from harvest." Seven years and 100-plus portraits later, Karlin still finds the project engaging. "It's a simple way to express my commitment to local, sustainable agriculture and to celebrate the seasons."

Whether you're a potato-based philosopher or a hoe-handling utilitarian, let these portraits serve as a simple reminder: Grow with gratitude and honor the small wonders of your garden and harvest basket.





The first gathering of the garden in May of salads, radishes and herbs made me feel like a mother about her baby — how could anything so beautiful be mine.

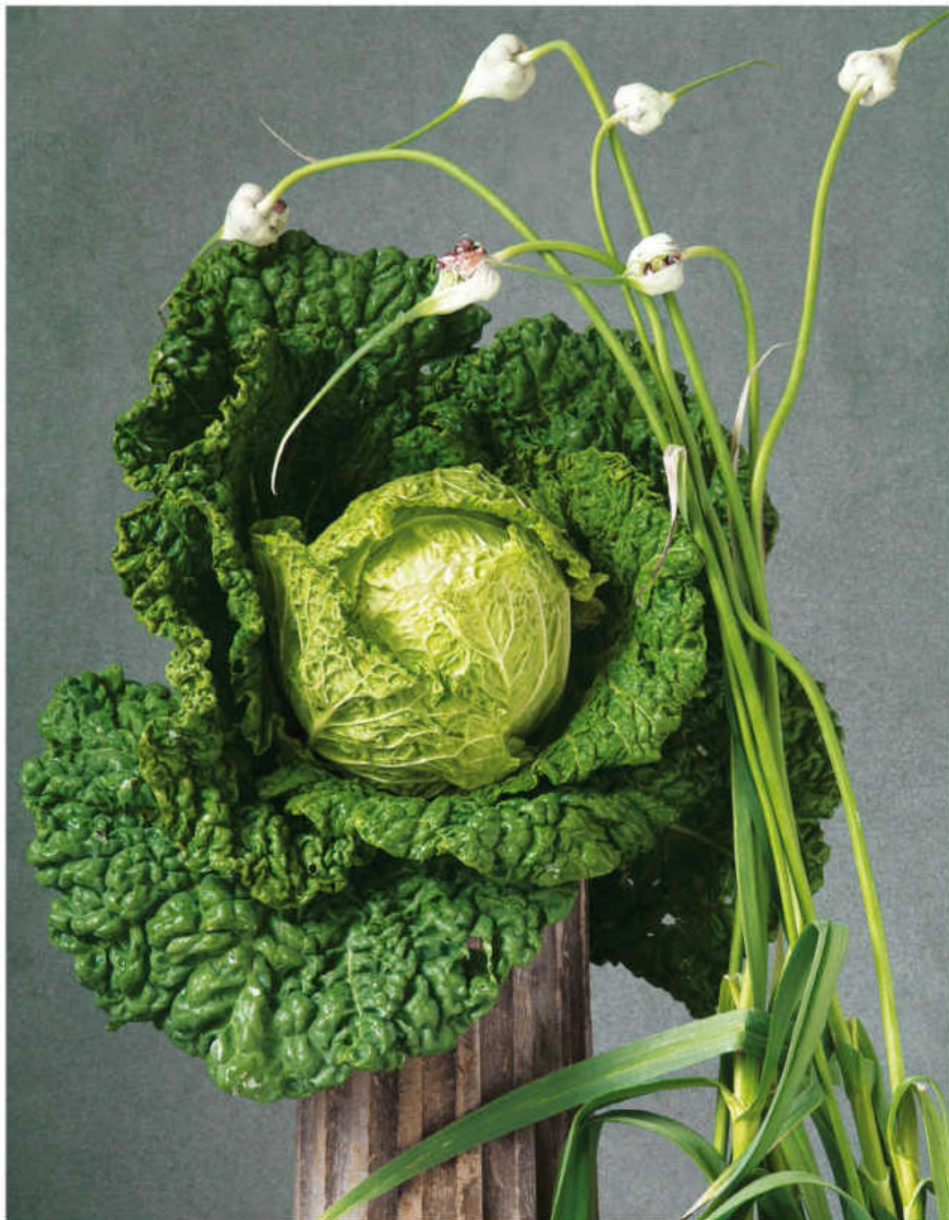
— Alice B. Toklas



Clockwise from top left: 'Bishop' Cauliflower, 'Watermelon' Radishes, 'Orion' Fennel, 'D'Avignon' Radishes, Late Summer Still Life.



Award-winning garden and food photographer Lynn Karlin lives in Belfast, Maine, and often discovers models at her local farmers markets. Her pedestal portraits are available as limited-edition prints online at www.LynnKarlinPhoto.com, and in her 2016 *Simply Raw* calendar from Amber Lotus Publishing (<http://goo.gl/3F8B24>). MOTHER EARTH NEWS editor Laura Dell-Haro studies and writes about the domestic and wild fruits growing in her Great Plains gardens.



Clockwise from top left: 'Concord' Grapes & Figs, 'Summercrisp' Pears, Savoy Cabbage & Garlic Plants, Draped Squash Blossoms, 'Black Futsu' Squash.

DIY, All-in-One KITCHEN CUPBOARD



Use recycled or off-the-shelf cabinets to build this Hoosier cupboard for baking prep, kitchen storage or whatever you need most.

By Spike Carlsen

Remember those multipurpose, free-standing kitchen cabinets with pull-out bins, built-in flour sifters, and lots of storage? The “Hoosier” cupboard first appeared in the United States more than 100 years ago, bringing convenience and efficiency to the hodgepodge of shelves, tabletops, hanging pans and bins in cluttered turn-of-the-20th-century kitchens. (See “Hoosier History,” opposite.)

We believe Hoosier-style cupboards deserve a prominent place in today’s kitchens. MOTHER’s updated design—part workstation, part storage cabinet—retains the original’s spirit and functionality. Our version features handy dispensers for grains or flour, and a pull-out work surface, making it a perfect baking cupboard. Instead of the mixer shown at left, you could place your grain mill on the swing-up shelf. You could also modify these plans to create a specialized space for fermenting, vegetable storage, built-in composting—or something else entirely. These plans offer all the space and flexibility you’ll need for stashing the tools and materials to carry out your particular culinary passion.

Any homesteader or cook with average do-it-yourself skills can build this Hoosier. New materials (not including accessories) cost us \$575: \$270 for stock cabinets, \$120 for plywood, \$80 for boards and moldings, and \$105 for hardware, laminate and fasteners. That’s a bargain, considering similar ready-made cupboards run at least \$2,000—and wouldn’t be built to your custom specifications. You could further reduce costs by recycling older cabinets. Our cupboard has many unique features:

- Most of the components are available at home improvement centers. The skeleton is made of stock kitchen cabinets. The

sides, back and shelves are cut from standard 1/2-inch oak plywood. The decorative crown molding and 1-by-2 oak face frames are also off-the-shelf purchases.

- You can easily alter these plans. Simply select different sizes or configurations of stock cabinets, and then, following the same basic steps outlined in this article, bring them together using cut-to-fit parts.
- You can accessorize the cupboard dozens of ways by adding sliding trays, flour sifters, roll-out spice racks, bulletin boards and more. Our finished cupboard features a swing-up shelf for a stand mixer, a space-saving pull-out work surface for kitchen prep, and dispensers for grains and flour.

Taking Stock

These plans call for the stock cabinets available at any home improvement center. You'll still have to cut, measure and install parts correctly, but you won't have to build a cabinet from scratch. When you shop for stock cabinets, look for "base cabinets" for the bottom section of the Hoosier, and "wall cabinets" for the top section. The stock cabinets must have concealed Euro-style hinges for the plans to work. Stock cabinets vary in size from one manufacturer to another, and you may want to select different sizes to make your cupboard narrower or wider than ours. Cut and fit as you go, to produce tight joints.

A circular saw, drill, miter saw, jigsaw, router and straightedge jig are must-have tools for this project. We also recommend that you beg, borrow or rent a pneumatic finish nailer. Go online to www.MotherEarthNews.com/Hoosier-Cupboard for a cutting list and complete DIY instructions.

The overall dimensions of our finished cabinet are 45 inches wide by 25 inches deep by 80 inches tall. Make your cabinet taller

You can add
racks, hoppers,
bins, canisters
and more
to create a
customized
cupboard for
your kitchen.

or shorter by adjusting the heights of the side (F) and back (E) panels. Refer to the drawing on Page 41 before you build.

Accessorize, Accessorize

The sky's the limit for accessories on your homemade Hoosier cupboard. The 21-inch-wide middle base cabinet, and the equivalent space between the upper cabinets, gave us the room we wanted for adding a swing-up shelf (also known as a "mixer lift") below and dry-goods dispensers above. The 12-inch-wide side cabinets provide plenty of extra storage space for trays and cutting boards, and room for drawers

that can hold spices, wooden spoons and other smaller items.

You can add racks, hoppers, bins, canisters and other features to your free-standing kitchen cabinet. In addition to our swing-up mixer shelf, we installed spice organizers in the drawers, and cork panels for bulletin boards inside the upper cabinets. Instead of cupboard doors for your base cabinets, you may prefer drawers. Perhaps you want to add a tilt-out potato-storage bin, or a sliding system to hold containers for kitchen waste you intend to compost—just find the appropriate style of stock cabinet and the right hardware, and be sure to adjust the cabinet's overall dimensions to make it work.

Bottom's Up

Gather the base cabinets (A, A, B). Remove the doors and drawers, clamp the cabinets together so they're flush on the front

Hoosier History

The Hoosier Manufacturing Co. of Indiana made the first Hoosier-style kitchen cabinets circa 1900. The company marketed them with the motto, "Steps saved in the kitchen give women strength and energy for other things." Dozens of other manufacturers jumped on the bandwagon with innovation upon innovation. Today, a Hoosier-style cabinet will add extra storage space to any kitchen—plus provide a nice throwback to an era when kitchens were more than just places to microwave frozen dinners.

The Swiss Army knife of the kitchen, a Hoosier cupboard might contain a sliding top, flour sifter, bread box, cutting board, food grinder, spice rack, cookbook holder, and even an ironing board. Hoosiers came in a wild array of configurations with open shelves, banks of drawers and frosted doors. Many of them sported tambour doors that could roll down to mask a mess. If you're thinking of modifying our plans to better suit your needs, type "Hoosier cabinet designs" into an online search engine and start scrolling through the photos for ideas.





You can customize this cupboard to suit your culinary cravings. Our version features spice drawers, grain and flour dispensers, and a swing-up mixer shelf.

and top, drill pilot holes into the interior sides, and secure the cabinets to one another with 2½-inch screws.

You'll have to make the back of the base cabinet the same size as the front. Because the outer edges of the face frame will protrude beyond the sides—by 1/4 inch in our situation—you must insert spacers (C) between the cabinets at the rear so the sides will remain parallel. (We used 1/2-inch spacers, but your spacers may be wider or narrower depending on how far your frame's edges protrude.) Next, add furring strips (D) to the cabinet sides near the back and along the bottom to fill in the space created by the protrusion of the face frame's edges in front. Again, adjust the thickness based on the thickness of the frame; ours measured 1/4 inch. When you're finished, the back of the base cabinets should measure the same as the front—in our case, 45 inches.

The next few steps require precision-cutting of plywood, which will be much easier with a jig. (Find the cutting diagram, and learn how to build a straightedge cutting jig, at www.MotherEarthNews.com/Hoosier-Cupboard.) Cut the back panel (E) from a sheet of 1/2-inch plywood. Before you cut, turn the best-looking side facedown to minimize splintering on that surface. Secure panel (E) to the back of the base cabinets using wood glue and 1¼-inch screws.

Measure and mark the L-shaped side panels (F) on a second sheet of 1/2-inch plywood. A drywall square will help you with this task. Cut the sides using the straight-edge jig, positioning it three times to get the L-shape required for each side. At the inside corner of each L, cut the last 1 or 2 inches with a jigsaw. The height of the lower leg of the L should be 2 inches taller than the top of the base cabinets. This 2-inch space will create room for the components that will make up the pull-out work surface: 1/2-inch base top (L), plus 1/2-inch glides

(KK), plus 3/4-inch space for the laminate tray panel (EE), plus 1/4-inch clearance.

Secure the side panels to the base cabinets with screws, taking care to align the front edge of the plywood flush with the front edge of the base cabinets.

Cut the cabinet top (G) from the third sheet of 1/2-inch plywood. Secure this to the sides and back using glue and 1½-inch finishing nails. Use scrap wood to temporarily support the upper cabinets (H) in the top-inside corners of the cabinet box. Again, make sure the front edges of the cabinets are flush with the front edges of the plywood side panels before securing them with screws driven in from the back and finishing nails from the side.

Cut and install the middle shelf (J), securing it to the bottom of the upper cabinets. Secure the 1/2-inch plywood panels (K) to the sides of the upper cabinets.

Screw the 1/2-inch plywood panel (L) across the top of the base cabinets—you can make the panel out of two pieces of leftover plywood because it will be hidden. Secure 1/4-inch-by-1½-inch batten strips (M, N) to the sides and back of the cabinet, and then install the bottom shelf (O). This space will create the cavity for stowing your pull-out work surface.

Materials List

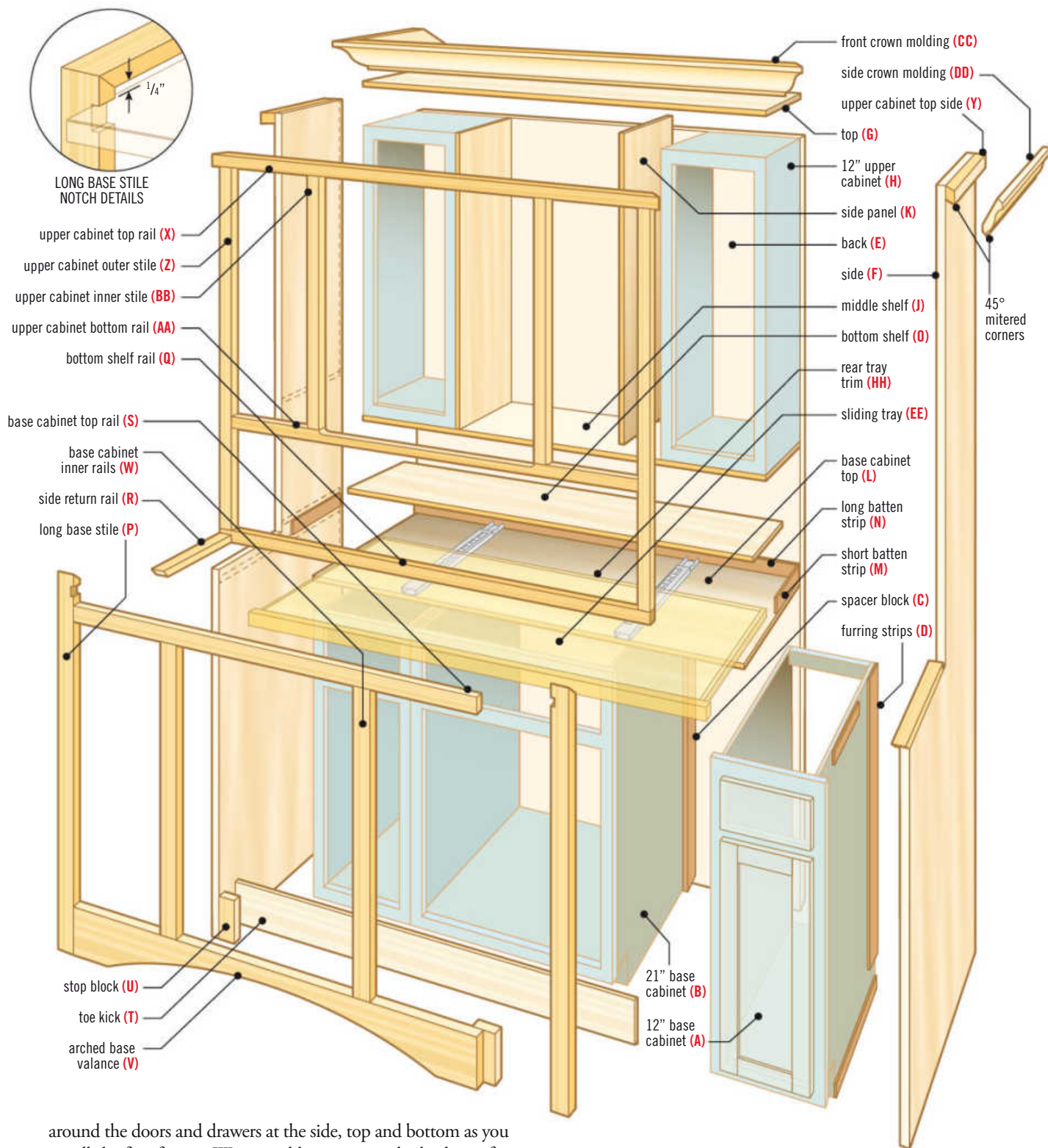
- 2 kitchen base cabinets (A), 12" x 24" x 34½"
- 1 kitchen base cabinet (B), 21" x 24" x 34½"
- 2 kitchen wall cabinets (H), 12" x 12" x 30"
- 3 sheets ½" oak plywood, 4' by 8'
- 6 oak 1-by-2s, 8' long
- 1 oak 1-by-6, 4' long
- 1 oak crown molding, 2¼", 8' long
- 1 sheet ¾" MDF or plywood, 2' by 4'
- Plastic laminate, 30" by 48"
- 2 bottom mount drawer glides, 16"
- 5 cabinet knobs
- 3 cabinet bin pulls

Other materials required to build the cupboard as pictured include spacer blocks, batten strips, furring strips, finishing nails, screws, wood glue, galvanized flashing and a mixer lift.

For the complete cutting list, and to view a cutting diagram and construction photos, go to www.MotherEarthNews.com/Hoosier-Cupboard.

Face On

The face frame pieces (P, Q, S, W, X, Z, AA, BB) will hide the exposed edges of the plywood and give the cabinet doors on both the bottom and upper cabinets a classic inset look. To determine how much side clearance your face frame will need for the door, open one of the doors and position a scrap of 1-by-2 next to it, and then close the door and measure the resulting gap—it should be about 1/4 inch. For uniformity, maintain this 1/4-inch gap



around the doors and drawers at the side, top and bottom as you install the face frames. We were able to use standard 1-by-2s for all but two of the face frame pieces, (Q) and (S).

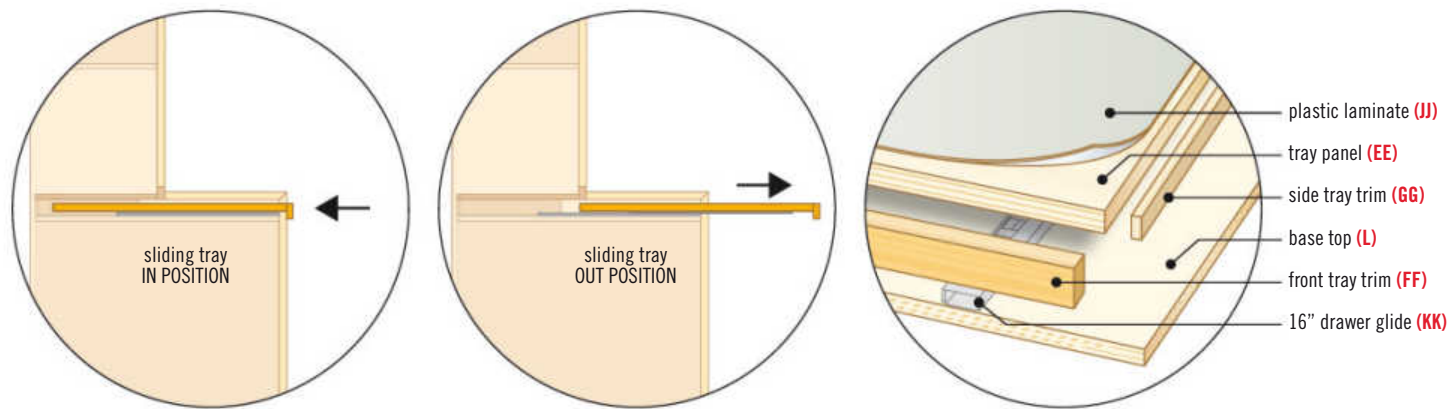
Use sandpaper or a 1/8-inch roundover router bit to ease the edges of the pieces. Start by installing the two side pieces (P) on the front of the base cabinets. These pieces should be mitered on top and have a 3/8-inch-by-7/8-inch interior notch to accommodate the pull-out work surface. The sides of these 1-by-2s will extend about 1/4 inch past the plywood on the outside.

Install the oak strip (Q) that will support the front of the bottom shelf (O). We ripped the strip to 1 1/4 inches to minimize the

lip on the front of the shelf. Make sure this piece extends past the sides the same distance as the side pieces (P) do. Secure it with glue and nails.

Next, install the oak strips (R) that will cover the top of the widest part of the side panel. They should be mitered on one end and butt tightly against the bottom shelf rail (Q) on the other.

Install the cabinet rail (S) across the top of your base cabinets. You may need to rip this to 1 1/4 inches to maintain your 1/4-inch gap between it and the tops of the doors.



Consult these drawings to build and install the extendable work surface, which slides on drawer glides and is topped with easy-to-clean laminate.

To trim out the very bottom of the base cabinets, cut a strip of 1/2-inch plywood (T) and apply it to the recessed toe-kick area. Then, install the arched bottom valance (V), supporting it on each end with small scrap blocks (U). We created the arch by flexing a thin strip of wood and tracing along the edge.

To complete the base cabinets' face frame, install the two vertical strips (W) to cover the joint between the middle and side cabinets. In our case, a 1-by-2 worked perfectly to create the 1/4-inch gap on each side. To trim the upper cabinets, run a 1-by-2 band (X, Y) around the top, again leaving a 1/4-inch clearance above the doors. Add the two long, vertical outside pieces (Z), followed by the horizontal middle shelf trim (AA)—we thinned out the shelf's middle portion with a jigsaw. Add the vertical strips (BB) to the inside edges of the top cabinets. Cut the crown molding (CC, DD) upside down on the miter saw, and apply it around the top.



Kneading room? Our cupboard design features a pull-out work surface.

Let It Glide

Measure the distance between the notches on the face frame base stiles (P), and then subtract 3/4 inch to determine the width of your sliding work surface (EE). Measure the overall depth of the top and subtract 3/4 inch to determine the depth of panel (EE). Cut the panel (EE) to size, and then use glue and nails to attach the 1-by-2 front edge (FF), and the 1/4-inch-by-3/4-inch side (GG) and back (HH) pieces. Carefully adhere an oversized piece of laminate (JJ) to panel (EE) using contact adhesive. After the glue has set, use a router with a trim bit to remove excess laminate, followed by a chamfer bit to ease the edges. (You can use solid wood for the sliding panel, but solid wood panels of that size tend to warp and crack.) Determine the location of the drawer glides (KK)—we spaced ours 32 inches apart—and secure the glide bottoms to the top of the base cabinet (L). Extend the drawer glide arms, position the panel (EE) on them, and secure the panel with a few screws. Test and adjust the accuracy of the glide before installing the rest of the screws.

Finishing Touches

Before applying finish, we took the time to carefully sand the cabinet doors and drawers with 120-grit sandpaper because they're normally a little rough right out of the store. We sanded all the other pieces, too, keeping an eye peeled for any glue that had spread or dripped. Next, we applied a pre-stain wood conditioner because solid wood and plywood absorb stain at different rates, and conditioner helps even out the absorption. Lightly sand the entire cupboard with 180-grit sandpaper after the conditioner

dries, and putty the nail holes. Apply your stain of choice followed by a couple of coats of polyurethane. A high-gloss finish will be easiest to clean, and is practical for kitchen cupboards.

We wanted to build a cabinet with traditional punched-tin panels, so we cut galvanized flashing to fit into the recesses on the upper cabinet doors, trimming the flashing about 1/4 inch larger than the panels in each direction.

We applied a few dabs of adhesive to the back of the flashing, and then quickly worked the metal edges between the flat panel and the door rail and stile. To create the punched-tin design, we enlarged a pattern we found online, printed it, and taped it to the flashing. We then cut a piece of plywood to support the back of the door panel as we punched the pattern holes using a hammer, screwdriver, and 16d and 8d nails.

We wrapped up work on our thoroughly modern Hoosier cupboard by installing a heavy-duty mixer lift, a magnetic cutlery strip, and dispensers, and then we flipped through a cookbook to choose which recipe we'd bake first. 🍪

Spike Carlsen is a master carpenter who appreciates fine craftsmanship and woodworking challenges. *Cabin Lessons*, his latest book (available on Page 64), recounts how his family built a sturdy structure on the Lake Superior shoreline.

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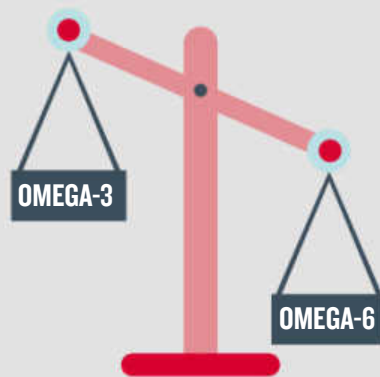
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FAT MATTERS

Understanding the Science

“Eat low-fat” advice has been wrong for more than 40 years! New evidence reveals the crucial role that healthful fats play in your well-being.

By Richard Manning

Omega-3 fats are getting a lot of attention these days, but they're not a panacea. No miracle cure exists for what ails us. Nonetheless, omega-3s do have a unique place in the evolving discussion of which foods to eat. Think of omega-3s as a gateway fat—a portal into a bigger, fuller, richer story of fats in general.

Fats are complicated, a fact we must embrace. It was, after all, an oversimplification that persuaded experts to recommend avoiding them for the past 40 years. Consider, for example, how the popular mantra “You get fat because you eat fat” relates to a cornerstone of contemporary medicine: “Cholesterol in our blood derives from eating certain fats, and causes the heart disease that kills us.”

None of this is true. Despite prominent critiques over the past decade by writers such as Mary Enig, Ph.D., Gary Taubes, and Nina Teicholz, these anti-fat articles of faith spawned legions of unctuous fat nags, cholesterol screenings, skin-trimmed chicken breasts, Egg Beaters, and margarine. *All of this was wrong*, yet, until recently, the medical industry has stuck by its low-fat guns.

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How Bad Advice Brought Bad Health

The long-recommended health guidelines that demonized all fat ultimately increased the amount of recommended carbohydrates in our diets. Unlike fats, carbohydrates are simple. Some carbohydrates are called “complex”—such as whole-wheat flour and potato starch—but all carbohydrates eventually reduce to sugars, which then reduce to glycogen. An overload of carbohydrates triggers an insulin response, leading eventually to insulin resistance—one of the markers associated with metabolic syndrome, which underpins obesity, diabetes, heart disease and the related inflammation.

Our bodies run on combustion, so we eat carbohydrates with the belief that glycogen is the fuel of life—but fat is fuel, too. Fats burn just fine. They just don’t reduce to a single, simple molecule. Your body will use fats in all of their rich variety—monounsaturated, polyunsaturated and saturated.

Eat Less Omega-6 and More Omega-3

Because of the ubiquitous use of high-omega-6 corn and soy to feed livestock and produce cheap, processed foods, the average contemporary diet is four times higher in omega-6 fatty acids than it should be for optimal health. This elevated level of omega-6 intake interferes with the essential functions of omega-3 fatty acids.

Current omega-6 to omega-3 ratio in the Standard American Diet: 15 to 1*

Optimal omega-6 to omega-3 ratio: 4 (or lower) to 1**

Recommended omega-3 consumption with elevated omega-6: 3,600 mg/day**

Recommended omega-3 consumption with reduced omega-6: 360 mg/day**

*Source: USDA

**Source: Dr. Joseph Hibbeln, NIH

Fats perform many tasks in your body: They provide energy, wire brain neurons, allow bones to absorb calcium, prevent blood clots, mediate inflammation, and speed nervous-system response—to name a few. At the same time, fats provide the medium for a whole array of micronutrients to per-

form their specialized jobs; that is, fats assist in bioavailability.

For example, a person short on one simple vitamin or nutrient often can’t correct the deficiency by taking a vitamin supplement. If the other components of basic transport and chemical reactions aren’t present to allow the body to use that vitamin, that person won’t absorb its benefits. Fats enable bioavailability for a variety of nutrients, including carotenoids and the fat-soluble vitamins A, D, E and K.

On some fat-related issues, mainstream consensus has emerged on what is actually good versus bad. Trans fats, for instance, are now understood to be the original Frankenfood. Trans fats derive their name from a simple transposition in molecular structure, a rejiggering that creates a molecular geometry without evolutionary precedent. While some trans fats are naturally occurring, artificial trans fats are found in industrially processed, hydrogenated vegetable oils. Whipped up as a cheaper alternative to lard in the early 20th century, artificial trans fats are the core of shortening and margarine; both are thinly disguised vegetable oils previously touted as healthful substitutes for allegedly harmful animal fats.

Many biochemical processes in your body work by pairing shapes of molecules to receptors, like keys fitting into locks. When your body doesn’t recognize a molecular shape, it treats the stranger as an invader, and fights it with the immune response of inflammation. Trans fats have

Why Grass-Fed Is Better

Products from grass-fed animals have superior omega-6 to omega-3 ratios than their factory-farmed counterparts. The lower the omega-6 to omega-3 ratio, the better. (Values are per 100 grams, about 3½ ounces, unless noted.)

Product	Omega-6	Omega-3	Ratio
Industrial chicken	3,090 mg	205 mg	15 to 1
Pastured chicken	1,170 mg	230 mg	5 to 1
Industrial beef	8,350 mg	1,005 mg	8.5 to 1
Grass-fed beef	8,495 mg	4,225 mg	2 to 1
Industrial pork	1,250 mg	100 mg	12.5 to 1
Pastured pork	2,625 mg	505 mg	5 to 1
Industrial eggs (2 eggs)	1,150 mg	75 mg	15.5 to 1
Pastured eggs (2 eggs)	4,600 mg	660 mg	7 to 1
Eggs with added omega-3s (2 eggs)	1,320 mg	1,320 mg	1 to 1
Farm-raised trout	710 mg	965 mg	1 to 1.5
Farm-raised salmon	980 mg	2,505 mg	1 to 2.5
Wild-caught salmon	170 mg	2,020 mg	1 to 12
Wild-caught tuna (bluefin)	55 mg	1,300 mg	1 to 23.5
Wild-caught striped bass	15 mg	770 mg	1 to 51.5

Values rounded; data from USDA and various other sources.

an unrecognizable shape, which is why the U.S. Food and Drug Administration now officially lists trans fats as unsafe to eat. Yet they remain the lubricant in much of fast and processed food.

An advisory committee that guides federal nutrition policy signaled an even bigger shift in February 2015 by reversing long-standing advice to avoid foods high in saturated fats, such as butter and lard, and those high in cholesterol, such as eggs.

Omega-3s and Omega-6s

Many of the fats labeled “essential fatty acids” perform particular, unique, and, yes, essential tasks to keep our bodies running. These fatty acids have no substitutes, and for the most part can’t be made within our bodies. The litany of essential fats is a daunting string of polysyllabic nomenclature only a chemist could love, and you can’t boil it down. Our health and intelligence depend on filling every gap on the list.

Here’s where omega-3s enter the story: The damage wrought by removing them from our bodies is easy to spot, well-



Grass-fed beef is richer in essential omega-3 fatty acids than factory-farmed beef is.

researched and frightening. A lack of a particular omega-3 — docosahexaenoic acid, or DHA — *undermines the function of our brains*. As the British journalist Graham Rose famously wrote, we are in danger of creating “a race of morons” because of the omega-3 deficiency in contemporary diets.

The research is clear.

Here’s the scary news: Most of us eating modern diets aren’t getting enough of these crucial omega-3 fats.

Omega-3 is not the name of a single kind of fat molecule, but rather is an

umbrella term for a set of five similar fat molecules.

Like omega-3, omega-6 is an umbrella term for a number of fatty acids, and the key one is linoleic acid. Linoleic acid is the primary fat in corn, soy, cottonseed, safflower and sunflower oils. Modern industrial agriculture and food processing have replaced the DHA we once consumed with linoleic acids from vegetable oils. On average, since the late 1960s, U.S. diets have risen from 1 percent linoleic acids to 8 percent because of direct consumption of these oils coupled with indirect consumption via factory-farmed meat, eggs, dairy and fish.

A growing number of researchers focus on one specific omega-3 fatty acid, DHA. This unique essential fat is fundamentally important to humans and all life, and it is critical to brain function. A shortage of DHA is linked to a wide range of brain malfunctions, including:

- Attention-deficit disorder
- Dementia
- Depression
- Low IQ
- Manic depression
- Memory loss
- Schizophrenia
- Violent behavior

The brain runs on fat, but this is not a brain issue alone.

The prevailing advice, to choose vegetable oils rather than animal fats, may also have raised obesity rates by lowering DHA concentrations in red blood cells. It’s important to realize that while other omega-3s have particular functions, they can’t substitute for DHA. Eating more

Fats in Your Kitchen

The more you can reduce your consumption of corn, soybean and other vegetable oils that are high in omega-6s, the better. The lower the ratio of omega-6 to omega-3, the better. While soybean oil has a more desirable ratio than olive oil and lard, soybean oil has five times more omega-6 than olive oil or lard. (Values are per 100-gram sample, about 3½ ounces.)

Product	Omega-6	Omega-3	Ratio
Butter (industrial)	2,730 mg	315 mg	8.5 to 1
Butter (pastured)	1,800 mg	1,200 mg	1.5 to 1
Lard	10,200 mg	1,000 mg	10 to 1
Olive oil	9,765 mg	760 mg	13 to 1
Flaxseed oil	12,700 mg	53,305 mg	1 to 4
Camelina oil	21,430 mg	35,715 mg	1 to 1.5
Soybean oil	50,420 mg	6,790 mg	7.5 to 1
Corn oil	53,510 mg	1,160 mg	46 to 1
Canola oil	18,760 mg	7,635 mg	2.5 to 1
Sunflower oil	28,925 mg	40 mg	723 to 1

Data from USDA and various other sources.

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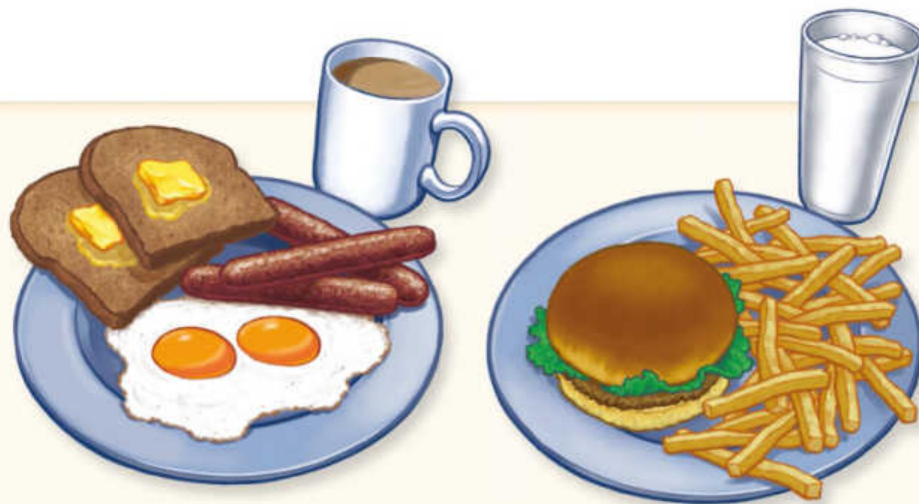


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Small Changes, Big Results

These charts show how choosing pastured versions of foods you're already eating can improve your intake of omega fatty acids to ideal levels. A ratio of 4 to 1 is a good target.



BREAKFAST

	Omega-6	Omega-3	Ratio
2 industrial eggs	1,150 mg	75 mg	15 to 1
4 ounces industrial pork sausage	3,740 mg	150 mg	25 to 1
2 slices toast w/ 2 tbsp margarine	1,230 mg	85 mg	14 to 1
Industrial Choices TOTAL	6,120 mg	310 mg	20 to 1

2 omega-3-enriched eggs	1,320 mg	1,320 mg	1 to 1
4 ounces pastured pork sausage	2,945 mg	565 mg	5 to 1
2 slices toast w/ 2 tbsp pastured butter	860 mg	350 mg	2.5 to 1
Pastured Choices TOTAL	5,125 mg	2,235 mg	2.5 to 1

LUNCH

	Omega-6	Omega-3	Ratio
Quarter-pound industrial burger	10,190 mg	1,225 mg	8.5 to 1
Medium fries cooked in vegetable oil	4,960 mg	415 mg	12 to 1
8 ounces industrial whole milk	295 mg	185 mg	1.5 to 1
Industrial Choices TOTAL	15,445 mg	1,825 mg	8.5 to 1

Quarter-pound pastured burger	10,355 mg	4,865 mg	2 to 1
Medium fries cooked in tallow	845 mg	170 mg	5 to 1
8 ounces pastured whole milk	70 mg	30 mg	2.5 to 1
Pastured Choices TOTAL	11,270 mg	5,065 mg	2 to 1

omega-3s will not stave off these problems unless an adequate amount of DHA is in the mix.

For instance, omega-3 alpha *linolenic* acid (distinct from omega-6 *linoleic* acid), the omega-3 found mostly in plants, is the precursor of DHA (hence the “alpha”). Your body can convert alpha *linolenic* acid to DHA, but only in a slow and inadequate manner.

The best contemporary source of DHA is cold-water fish, such as salmon and tuna. Can we solve these urgent health problems simply by eating more fish? J.T. Winkler, a British researcher of nutrition policy, provided a blunt answer to another key question: “Are there enough fish in the sea to provide the amounts we need? No.” It seems our species has overpopulated its habitat to the point of severe malnutrition, in addition to the significant harm we’ve done to other species.

The industrial solution to overfishing seems to be aquaculture, or farmed fish. But that “solution” is a dead end, and the reason is illuminated by the term some apply to farmed fish: “floating vegetables.” Farmed fish would ideally

get omega-3s mostly by eating fish meal and fish oils, but they don’t. Farmed fish become “floating vegetables” simply because aquaculture worldwide feeds vegetable oils to farmed fish, a practice that has left them with an unnatural and unhealthful omega-6 to omega-3 ratio—the same defect of all factory-farmed foods.

Research reveals that animals raised on pasture provide well-balanced essential fatty acids.

The problem is that foods high in omega-6—notably soy and corn oils, as well as factory-farmed meat and dairy—produce such a surplus of omega-6 fatty acids that the beneficial omega-3 fats can’t compete. When omega-6s flood your system, they use up all the molecular sockets needed by omega-3s, so the latter are blocked from doing

their jobs. The modern U.S. diet has an omega-6 to omega-3 ratio of more than 10 to 1. Research shows we evolved with a ratio closer to 1 to 1, and would be a lot healthier if we could achieve that again.

A Norwegian researcher looking at diets fed to farmed fish and lab animals found that the simple switch in concentrations of these two key fatty acids to favor omega-6s provoked obesity and inflammation. Restoring the ratio to a more natural balance reversed both obesity and inflammation.

Finding the Real Solution

Oddly, studies of omega-3 sources have focused almost exclusively on fish, and were this the end of the story, humanity would be in a terrible jam. Red meat from beef and pork, as well as poultry meat, has been generally ignored, simply because grain-fed animals face exactly the same problem as farmed fish: They’re fed corn and soy, which are so high in the wrong kind of fats. Almost all the beef, pork and poultry raised in the United States comes from animals fed such a diet, which is cheap in more ways



Choose olive oil and
pastured butter, and
avoid high-omega-6
sources, such as corn
and soybean oil.

DINNER

	Omega-6	Omega-3	Ratio
2 industrial chicken thighs	5,810 mg	390 mg	15 to 1
Tossed salad w/ 2 tbsp soybean oil and vinegar	13,615 mg	1,835 mg	7.5 to 1
Baked potato w/ 1 tbsp margarine	455 mg	75 mg	6 to 1
Commercial apple pie	2,585 mg	155 mg	17 to 1
Industrial Choices TOTAL	22,465 mg	2,455 mg	9 to 1
2 pastured chicken thighs	2,810 mg	1,390 mg	2 to 1
Tossed salad w/ 2 tbsp olive oil and vinegar	2,635 mg	205 mg	13 to 1
Baked potato w/ 1 tbsp pastured butter	270 mg	175 mg	1.5 to 1
Apple pie w/ lard crust	2,600 mg	255 mg	10 to 1
Pastured Choices TOTAL	8,315 mg	2,025 mg	4 to 1

than one, and fattens them up quickly. Their meat, milk and eggs are significantly different from products that come from animals raised on their original, pastured diets. (See chart on Page 47.)

As is the case with wild fish, products provided by pasture-raised animals deliver the DHA we require. While grass-fed beef, eggs and dairy products are not as rich in DHA, pound for pound, as wild, cold-water fish, they still have it in abundance.

Besides DHA, there are four other discrete omega-3s, and each has a role to play. Compared with feedlot products, milk and meat from pasture-raised animals also have 300 to 500 percent more *conjugated* linoleic acid, or CLA—another omega-3 fatty acid (dis-

tinct from *omega-6* linoleic acid). This CLA offers benefits for brain health different from those of DHA. In addition to linoleic acid, there are three other omega-6s, each with vital functions, especially in our immune systems—and this only accounts for two groups of the polyunsaturated fats.

Taken together, all of this evidence drives a “steak” in the heart of fat-phobic advice and warnings about

high cholesterol. The widespread and unanimous evidence correlates reduced omega-3 fats with reduced brain function, especially the long-term, corrosive effects that lead to dementia and Alzheimer’s disease. Research even shows a connection between the widely prescribed statin drugs that lower blood cholesterol, such as Lipitor, and reduced brain function. This is not a side effect of the drugs, but a pri-

mary effect—statins reduce cholesterol. Now, consider that while your brain is about 2 percent of your body’s weight, it holds about 25 percent of your body’s cholesterol, and is composed of approximately 60 percent fat. In short, your brain *must* have cholesterol.

All of this is widely variable depending not just on food source, but also on season, storage conditions, integrity of suppliers, and the perishability of some of these fats. There are no guarantees, but this story hangs together: The complexity itself is what we need to seek, not just *this* fat or *that* wonder micronutrient.

The following, simple rules will point us in the right direction:

Avoid processed foods. They’re loaded with soy- and corn-based ingredients, and are too high in sugars, as well as preservatives and other dubious additives.

Embrace variability. Don’t take all of your eggs out of one basket. Seek rich sources of omega-3s, especially DHA, and the rest of the essential fatty acids will come with the package.

Don’t rely on supplements. Even the best have serious drawbacks with perishability and bioavailability. At its worst, the industry is riddled with snake oil and fraud.

Choose wisely and eat well. The best sources of healthful fats and the whole array of micronutrients are wild, cold-water fish; wild game; and meat, dairy and eggs from grass-fed animals. Complement those with the abundant micronutrients and fats in fresh, unprocessed foods, nuts, fruits and vegetables—and see what you think. Or, more accurately, see *how* you think, and how you move and feel. 🌱

Read more about this topic on Page 4 and at www.EFAEducation.org, a website maintained by scientists at the National Institutes of Health. —MOTHER

Richard Manning is the author of *Against the Grain: How Agriculture Has Hijacked Civilization*, and, with Dr. John Ratey, of *Go Wild*. Find both at www.MotherEarthNews.com/Shopping.

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SEED STARTING

12 Easy Setups for Home Gardeners

Glean creative ideas from these real-world methods, and give your seedlings a healthy start at home this coming spring.

Growing your own seedlings indoors can save you big bucks, as well as open up a whole new world of crop variety options. When you start seeds at home, you aren't limited to the, well, "garden variety" plants available at most garden centers. You can order seeds of anything you desire to try—such as disease-resistant, organically bred, regionally adapted or rare heirloom varieties—from the many mail-order seed companies across the United States, and then sprout them yourself.

The range of setups you can use to start your seeds is nearly as diverse as the plants you can grow. We reached out to our readers to find out what seed-starting setups work well for them, and this is a roundup of their ideas. As you get set up at home, keep in mind that using lights will usually work better than placing plants on windowsills, and certain lights are superior for this purpose. We recommend standard fluorescent T8 bulbs because two of them together produce about 3,000 lumens. Even though the glow looks bright to human eyes, 3,000 lumens is only a small fraction of the light a seedling would receive outdoors. Keeping your seedlings within only a couple of inches of these bright lights will make them sturdier and healthier.

Not all the advice here precisely follows the "best practices" for seed starting, but together the tips comprise practical ideas that have worked for resourceful gardeners. For more guidance,



check out "Best Tips for Starting Seeds Indoors" at <http://goo.gl/aTPQxM>.

1 Cool Cart on Wheels

I built my grow-light stand last year using ash wood from my backyard that I cut on my bandsaw mill. The stand has two levels, and it's equipped with shop lights and bulbs I purchased at Home Depot. The bulbs are Phillips ALTO T8s, which put out about 2,750 lumens. I'm able to adjust the fixture height to keep the bulbs within a couple of inches of the plants for best results. This stand easily disassembles for storage, and I can also move it around because I built it on wheels. It works so well that I use it to grow lettuce indoors when I'm not starting seedlings. —Edward Hollmen



2 Grow-Light Bookcase

I start my seeds on a multipurpose unit that functions as a seed-starting stand and bookcase. The grow lights are a permanent fixture of the stand, affixed to the underside of each shelf. When I'm starting seeds, I stack a few books underneath the seed-starting trays to keep them close to the lights, and then adjust the height of the book stacks as the seedlings grow. To build such a unit, first purchase light fixtures, and then

compile a lumber list based on the length of your lights and how many shelves high you want your bookcase to be. Find full plans for this structure online at <http://goo.gl/DdKj4a>. —Cheryl Long

③ Yard Sale Sensation

My seed-starting setup resides on top of a bookcase in my den, and it never fails to produce a full complement of seedlings. Except for some cups and compost, I scored all the components at a yard sale. The cost? Amazingly cheap:

- 4 plastic shoe boxes at 25 cents each: \$1
- Fluorescent light fixture with 2 tubes: \$3
- Timer: 25 cents
- Extension cord: 10 cents
- Package of foam cups: \$2
- Ice pick/awl: 50 cents
- Homemade compost: free
- **Total cost: \$6.85**

I heat the tip of the awl over one of my gas stove's burners, and then use the awl to melt irrigation holes around the base of each foam cup, which I can reuse from year to year. I hung the fluorescent fixture beneath an overhead shelf. —*John Grass*

④ Making Do at a Mile High

I'm a Master Gardener, but I'm also a mile-high, off-grid, limited-finance gardener. After hauling potting mix home on the back of my snowmobile, I fill up a couple dozen 2-inch peat pots and a couple dozen 3-inch pots, as well as some egg cartons and large yogurt containers. I start tomatoes, peppers, basil, cilantro and more. The yogurt containers work well for reporting seedlings after a couple of weeks, when the starts need larger containers. Recycling and reusing readily available items in my price range? Perfect!

I cover my seeds with damp newspapers and place them near the woodstove until they sprout (keeping them far enough away so that the plastic pots won't melt). Then, they graduate to the lighted seed table, but we only run power for an hour or so at night; the rest of the time, they sit in the south and west windows. When the "babies" get bigger and the temperature rises above 45 degrees Fahrenheit, I move them into my cold frame on the porch during the day. My germination rate is about 90 percent. At the end of April, I plant my seedlings in raised beds that I cover with plastic hoops to provide extra protection.

Anyone can do this who has a warm corner, a bright window, and a fluorescent light or two. Just buy quality seeds and



use a good seed-starting soil mix. Never let your soil dry out, but don't drown the small plants either. Transplant the seedlings to a bigger pot when they get taller than the one you started them in. Place them in sunshine as much as you can. —*Betsy Mehafeey*

⑤ New Seeds on the Block

I start my seeds in soil blocks, which means I don't need any small containers. I make my own seed-starting mix based on a recipe from Eliot Coleman's book *The New Organic Grower* (available on Page 64). I also place a heat mat underneath the trays to give the seeds bottom heat to help them sprout, and I mist the seeds with a spray bottle daily. After the seeds sprout, I unplug the heat mat.

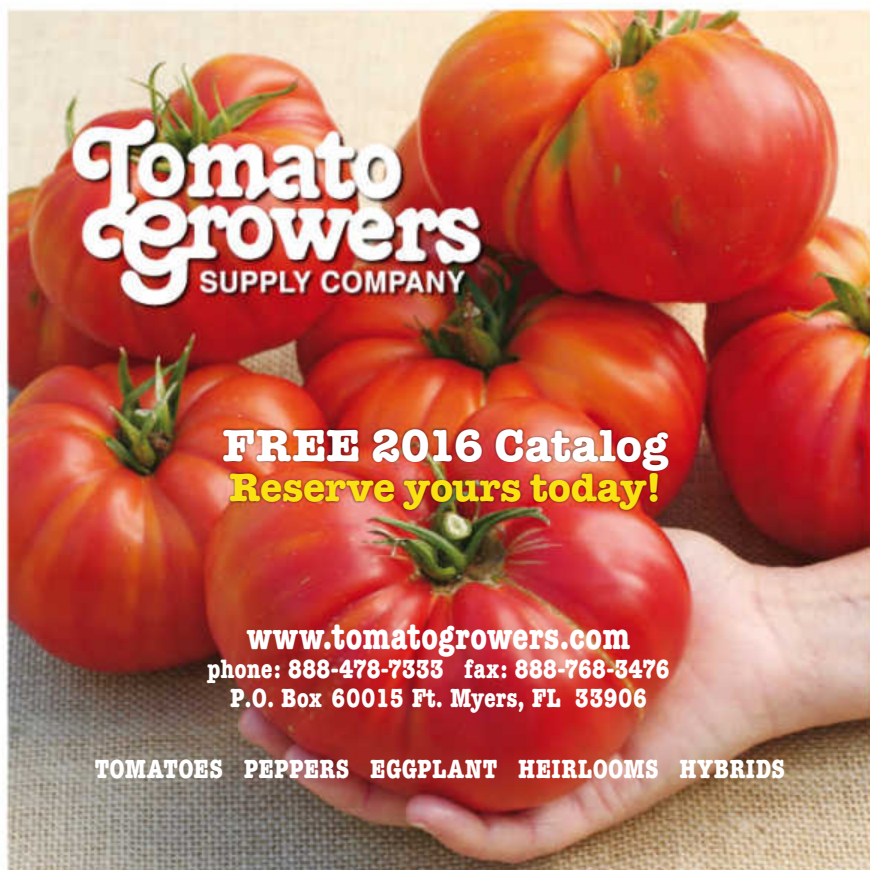
When the sprouts develop their first true sets of leaves, I transfer them to six-packs (you can use larger soil blocks at this point to avoid plastic containers altogether). I place them in a south-facing window until it's time to start hardening them off for planting in the garden. To harden seedlings off, place them outside in a relatively sheltered area for an hour or so per day at first, and then gradually increase the length of their outdoor time each day. —*Dale T. Rodgers*

⑥ Banking on Blankets

I'm a horticultural technician, and I have a large country property in western Quebec. Our growing season is much shorter than most. In winter,

our temperatures drop to minus 30 degrees Fahrenheit, so the soil doesn't warm up enough to host tomatoes and other heat-loving, long-season crops until July. My seedlings need to be large, hardy and ready to produce within this short growing season.

Bell peppers and tomatoes require an eight- to 10-week jumpstart in our region. To get them going, I place an electric blanket under my seed-starting trays. I put a piece of heavy-grade plastic over the blanket to keep it dry. I was able to purchase used electric blankets for less than \$10 apiece. For plants that germinate best with a soil temperature of about 70 degrees, including tomatoes, we use the low setting on our electric blanket to maintain that range of heat under the trays. For plants that do best with soil temperatures of about 80 degrees, such as bell peppers,



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we use the blanket's medium-high setting. Between bottom heat and overhead grow lights, my seedlings are large, vigorous and ready to produce abundant yields for my family to enjoy. —*Christina Eckerlin*

7 Milk Jug Mini-Greenhouses

I've tried many types of containers for starting seeds, including paper cups and plastic trays. So far, 1-gallon, clear plastic milk and water jugs have worked best. To try this, remove the caps and cut small holes in the jugs' bottoms for water drainage. Then, cut around three sides of each jug, about 3.5 inches from the bottom, to create a hinge that will keep the bottom of the jug (your seed bed) connected with the top of the jug (your seeds' protective lid).

I fill the jugs with soil mix and place nine to 16 seeds in each jug, depending on plant size. In early spring, I keep the jugs inside in front of a southwest-facing window, and then move them outdoors when the weather starts to warm. When I transfer the seedlings to the garden, I simply scoop them out with a large serving spoon, taking care to bring as much soil with each plant as possible to limit root disturbance.

This idea originally came from one of your other contributors. Thanks to all who generously share their gardening ideas and experiences! —*Lisa Facciponti*

8 No Lights Required

In the past 40 years, I've tried many ways to start seeds. For cold-hardy plants, such as onions and cabbage, I've found that the least messy and least fussy method is to sow seeds in large plastic containers with lids, and then set them outside. The containers double as simple cloches for frost protection.

You can use recycled lettuce clamshells, milk jugs cut in half—really, any container made of clear or opaque plastic. Fill each halfway with damp seed-starting mix, add a few seeds, and then lightly cover the seeds. When it's time for the seeds to come up, they'll come up! You won't have to repot or harden off. I start my seeds in late winter, and I've found that they'll sprout even when the cloches are covered with snow. When the weather warms and the baby plants begin pushing off the lid, I open it, give them a dose of fish emulsion, let them get stronger, and then transplant them to their new home. —*Laura Johnson*



9 Freezer Pleaser

To germinate my seeds, I've made a heated germination station out of an old, non-working upright freezer. It's outfitted with a 40-watt bulb attached to a shop light fixture that I hung inside the freezer to provide warmth. The freezer is situated on an unheated porch, and its inner temperature averages 75 to 80 degrees Fahrenheit, even on subzero nights. This method has sped up my seeds' germination time significantly. It's my greatest low-tech repurposing achievement to date! Not bad for gardening on a shoestring budget. —*Cris Canton*

10 Greenhouse Cultivation

I do all of my seed starting in a 6-by-8-foot greenhouse. My seed-starting pots sit on built-in shelving that's about chest-high, which makes for easy planting and repotting. I make sure to vent the greenhouse on sunny days so my seedlings don't overheat. The greenhouse provides a warm, bright spot to get plants started, and I don't have to take up any space inside my house for the process. —*Vicki Slater Fugate*

11 A Festival of Lights

A friend named this my "Christmas tree light farm." I've been using this set-up to start my seeds for four years now. Grow lights hang from a wooden rack and strands of holiday lights rest below

my seed-starting trays to heat the soil (not touching the trays, but nested right below them). I stick a thermometer in the soil to monitor its temperature. —*JoAnn Hana*

12 6-Layer Racks

I use tall, simple, six-tier shelving units that I adjust as my plants grow. A fluorescent grow light hangs over each shelf. Each light plugs in to an outlet in the light above it, so that each overall unit has only one main plug that goes into a wall outlet.

This photo (above) shows just the hot peppers I grew last year; I started more than 500 of them. Each year, I also start onions, sweet peppers, kale, cabbage, broccoli, edible flowers, microgreens and hundreds of leeks. As soon as nighttime temperatures rise a bit, I start even more seeds in my unheated greenhouse. —*Joanne Tipler*



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NATURE REALLY DOES MAKE US HAPPY

Scientific research provides powerful evidence
that time spent in nature invigorates our brains and bodies.



By Eva M. Selhub and Alan C. Logan

As Western society has developed, we have retreated from the Great Outdoors, placing greater importance on technological pursuits and human creations. Mounting scientific evidence reveals that by pushing ourselves away from nature, we not only have distanced ourselves from crisis-level environmental problems, but also have begun to lose contact with a vital mental-health tool. By denying ourselves time in green spaces, we risk rejecting an essential part of our heritage—a truth that, ironically, we are now able to see more clearly because of advances in medical technology.

The Science of Seeing Green

Healers within various medical systems, from India's Ayurvedic medicine to traditional Chinese medicine, have long advocated for the importance of nature. Indeed, in many cultures, it's regarded as a form of medicine. But the notion

that trees and flowers can influence psychological well-being remained largely untested in a scientific way until 1979, when behavioral scientist Roger S. Ulrich examined the mental influence of nature scenes on stressed students. His psychological testing showed differences in mental states and outlooks after the students viewed various environmental scenes. The nature scenes increased positive feelings of affection, playfulness, friendliness and elation. Urban views, on the other hand, significantly cultivated one emotion in these students: sadness. Viewing nature tended to reduce feelings of anger and aggression, and urban scenes tended to increase these feelings.

Encouraged by his findings, Ulrich set up a similar experiment to measure brain activity in unstressed, healthy adults. His team discovered that seeing natural landscapes was associated with increased production of serotonin, a chemical that operates within the nervous system. Almost all antidepressant medications are thought to work by enhancing the availability of serotonin for use in nerve cell communication, hence its



Shinrin-yoku is a Japanese term meaning “basking in the forest.” Japanese researchers found reduced levels of stress hormones in subjects who took walks among trees.

moniker, “the happy chemical.” A follow-up study showed that green spaces acted as a sort of visual Valium: The nature scenes fostered positive thoughts, and lowered post-stress anger and aggression.

Many other contemporary researchers have used objective testing to support Ulrich’s pioneering work:

- In one study, older adults in a residential care center in Texas engaged in the same mental activities in two contexts—once in a garden setting and again in an indoor classroom. The participants were shown to produce lower levels of the stress hormone cortisol while in the garden.
- The presence of plants in a room, particularly flowering plants, can enhance recovery from the stress induced by an emotional video, quickly bringing brain wave activity back to normal, researchers at Kansas State University found.
- A research group from Taiwan reported that rural farm scenes are associated with higher alpha-wave activity, particularly in the right part of the brain, which has been linked with creativity. Forest scenes and natural water scenes promote alpha-wave activity and decrease heart rate. Conversely, an increase in muscular tension has been associated with city scenes.

Basking in the Forest

Among the many reasons to preserve what’s left of our forests, the mental aspects stand tall. In 1982, the Forest Agency of the Japanese government premiered its *shinrin-yoku* plan. In Japanese, *shinrin* means forest, and *yoku* refers here to “basking in.” More broadly, it is defined as “taking in, with all of our senses, the forest atmosphere.” In 1990, Dr. Yoshifumi Miyazaki of Chiba University conducted a small test study of *shinrin-yoku* in the beautiful landscape of Yakushima, home to Japan’s most revered forests. Miyazaki found lower levels of cortisol in subjects after they took forest walks, compared with those who took walks in the controlled environment of the laboratory.

Since then, university and government researchers in Japan have collaborated on detailed investigations, including projects to evaluate physiological markers while subjects spend time among trees. These studies have confirmed that spending time in a forest setting can reduce psychological stress, depressive symptoms and hostility, while at the same time improving sleep, and increasing vigor and a feeling of liveliness. These subjective changes match objective results reported in nearly a dozen studies—that lower blood pressure, pulse rates and levels of cortisol accompany time spent amid trees and flowers.

Stress hormones can compromise our immune systems, particularly the activities of front-line defenders, such as antiviral killer cells. Because forest-basking can lower stress-hormone production and elevate mood, it’s not surprising that it also influences immune-system strength.

Plants, Pain and Sickness

In 1984, Ulrich published a landmark study in the prestigious journal *Science*, in which he examined records for adults who had undergone identical gallbladder surgery in the same hospital. The only major distinction among the patients was the room into which they were wheeled for recovery. Rooms on one side of the hospital had windows with a view to a mini-forest, while rooms on the other side offered a radically different vista of red bricks. The results were quite dramatic: Those who had an outdoor view of trees had significantly shorter hospital stays, fewer post-surgical complaints, and were able to manage their pain with aspirin instead of narcotics. Other studies have confirmed Ulrich’s findings. Among them:

- Norwegian research showed that having a plant at or within view of an office workstation significantly decreases the amount of sick leave workers take.
- Research published in 2008 in the *Journal of the Japanese Society for Horticultural Science* showed that greening select high school classrooms with potted plants significantly reduced the



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students' visits to the school's infirmary compared with the number of visits by students attending classes in rooms without plants.

Green Neighborhoods

World Health Organization projections indicate that in fewer than 20 years, 75 percent of the world's population will live in urban settings, compared with the current distribution of about 54 percent city dwellers. The potential ability of a single factor—time in nature—to counteract a cascade of stress hormones will have enormous implications for us and future generations.

Because so many aspects of human health and even longevity are negatively influenced by stress, it follows that green space is a promoter of human health, vitality and longevity. Ample research confirms this. The closer your family lives to green space, the healthier you're likely to be, and the longer you're likely to live. Merely being in nature for brief periods—even just having it in view—can reduce the flood of stress hormones and improve immune defenses.



Keeping even a plant or two within view in a workplace has been shown to reduce the amount of sick leave workers take.

Your Brain on Nature

Critics might suggest that subjects who report improved mood while viewing nature scenes were merely marking the right boxes that would fulfill the researchers' expectations. The true, objective test would be the ability to go inside the brain and analyze it while it was focused on nature.

In the 1990s, researchers in California gained that ability by using functional magnetic resonance imaging (fMRI), a sophisticated brain-imaging technique. Their findings showed that aesthetically pleasing nature views fired up a specific portion of the brain that's rich in opioid receptors. These receptors connect to the brain cells within the dopamine reward system, and carry the potential to trigger feelings of wellness and to propel the motivation required for positive behavior.

This was an incredible finding, revealing that nature is like a little drop of morphine for the brain. Although best known for pain inhibition, the opioid receptors do so much more. When these receptors are activated, people are less likely to perceive themselves as stressed, are more likely to form emotional bonds,

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and tend to dwell less on negative memories.

In two separate studies, Korean researchers used imaging to assess brain-activation patterns while subjects viewed urban or nature-based scenery. In the first study, viewing the urban scenes resulted in pronounced activity in the amygdala, a center in the brain most often associated with feelings of fear. Overactivity of this center has been linked to impulsivity and anxiety. Furthermore, chronic stress and cortisol may promote activity in the amygdala, and in this overactive state, we tend to selectively prioritize the memorization of negative events and experiences. This becomes a vicious cycle: The world looks a bit more scary and depressing, and our dominant memories confirm that to be true. When the amygdala is amped-up on a regular basis, it fuels the brain's fear. The good news is that we can regain control by acknowledging our thought processes and placing ourselves in environments that will dial down the fear.

When large population studies indicating a stress-buffering effect are layered on top of studies using subjective and objective evaluations of mood and stress—and when this information is,

The Right Tally of Trees

Research has shown that pleasure and happiness are elevated as tree density increases. The bigger and denser the trees, the better the scenic beauty scores—up to a point. If trees are too tightly packed—if a trail is too narrow or obscured—the scene becomes foreboding and causes fear.

Lining one's walls with wood might be too much of a good thing. Japanese researchers have found that the sweet spot for the right amount of wood on the floor and walls is somewhere between 30 and 40 percent of surface area. If you go all-out and panel the entire room, your stress can actually increase.

in turn, layered onto hospital data and brain-imaging studies—the picture of nature's influence emerges. And when you add dozens of forest-basking studies from Japan, the argument that time in nature has no consequence on human health and physiology becomes impossible to support.

The results of these scientific investigations should wake all of us up to the importance of preserving nature. The wellness of individuals and nations—and clearly the planet—depends on recognizing that contact with nature is essential to human health.

Dr. Eva M. Selhub is a clinical associate at the Benson-Henry Institute for Mind Body Medicine at Massachusetts General Hospital, and an instructor at Harvard Medical School. Alan C. Logan is a naturopathic doctor, scientist and independent researcher. This article is based on an excerpt from their book, *Your Brain on Nature: The Science of Nature's Influence on Your Health, Happiness and Vitality*, available at www.HarperCollins.ca.

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For the 20th anniversary of *On Food and Cooking*, Harold McGee prepared a new, fully revised and updated edition. He has rewritten the text almost completely, expanded it by two-thirds, and commissioned more than 100 new illustrations. This book is an invaluable and monumental compendium of basic information about ingredients, cooking methods and the pleasures of eating. It will delight and fascinate anyone who has ever cooked, savored or wondered about food.

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Harold McGee is our foremost expert on the science of cooking, advising professional chefs worldwide. Now he offers the same authoritative advice for food lovers everywhere in *Keys to Good Cooking*. This is a touchstone for spotting flawed recipes and making the best of them, and it's a welcome aid for cooks of all types—translating the modern science of cooking into immediately useful information.

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THE BACKYARD HOMESTEAD BOOK OF BUILDING PROJECTS

Homesteaders, gardeners, small farmers and outdoor living enthusiasts will love these 76 DIY projects for practical outdoor items designed to help you live more sustainably and independently. Expert woodworker Spike Carlsen offers clear, simple, fully illustrated instructions for everything from plant supports and a clothesline to a potting bench, chicken coop, hoop greenhouse, cold frame, beehive, root cellar with storage bins, and more.

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THE BIG FAT SURPRISE

In *The Big Fat Surprise*, investigative journalist Nina Teicholz reveals the unthinkable: that everything we thought we knew about dietary fat is wrong. For decades, we have been told that the best possible diet involves cutting back on fat, especially saturated fat, and that if we are not getting healthier or thinner it must be because we are not trying hard enough. Based on a nine-year-long investigation, Teicholz shows how the misinformation about saturated fats took hold in the scientific community and the public imagination, and how recent findings have overturned these beliefs.

#7762 \$17.00



WHY WE GET FAT

Gary Taubes (author of *Good Calories, Bad Calories*) reveals the bad nutritional science of the last century—none more damaging or misguided than the “calories-in, calories-out” model of why we get fat—and the good science that has been ignored. He also answers the most persistent questions: Why are some people thin and others fat? What roles do exercise and genetics play in our weight? What foods should we eat and what foods should we avoid?

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homesteading & livestock



ADVANCED BUSH CRAFT

In this invaluable guide, Dave Canterbury goes beyond bushcraft basics to teach readers how to survive in the backcountry with very little equipment. He covers crucial survival skills like tracking to help readers get even closer to wildlife, crafting medicines from plants, and navigating without the use of a map or compass. With Canterbury's expert advice and guidance, those looking to extend their bushcraft skills will learn how to forgo their equipment, make use of their surroundings, and truly enjoy the wilderness.

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COUNTRY WISDOM & KNOW-HOW

This 476-page book is a compendium of small booklets published as “Country Wisdom Bulletins” in the 1970s. Whether you want to build a stone fence, make strawberry-rhubarb jam or plant an herb garden, this book will explain how to make your

homesteading dreams a reality.

#2793 \$19.95



FARMING THE WOODS

Farming the Woods covers in detail how to cultivate, harvest and market high-value non-timber forest crops such as American ginseng, shiitake mushrooms, ramps (wild leeks), maple syrup, fruit and nut trees, ornamentals, and more.

This is an essential book for farmers and gardeners who have access to an established woodland, are looking for productive ways to manage it, and are interested in incorporating aspects of agroforestry, permaculture, forest gardening and sustainable woodlot management into the concept of a whole-farm organism.

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#5913 \$19.95



STOREY'S GUIDE TO RAISING CHICKENS

This book has everything you need to know to raise one chicken, or 100! Here is all the information you need to successfully raise chickens—from choosing breeds and hatching chicks to building coops, keeping the birds healthy, and protecting them from predators. This revised third edition contains a new chapter on training chickens and understanding their intelligence, expanded coverage of hobby farming, and up-to-date information on chicken health issues, including avian influenza and fowl first aid.

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THE WOODLAND HOMESTEAD

This comprehensive manual shows you how to use your woodlands to produce everything from wine and mushrooms to firewood and livestock feed. You'll learn how to take stock of your woods; use axes, bow saws, chainsaws and other key tools; create pasture for livestock; prune trees to make fuel, fodder and furniture; build fencing and shelters for animals; grow fruit trees and berries; make syrup from birch, walnut or boxelder trees; and much more.

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nature & environment



PLASTIC-FREE

In her quirky and humorous style—well-known to the readers of her popular blog, *My Plastic-Free Life*—author Beth Terry provides personal anecdotes, stats about the environmental and health problems related to plastic, and personal solutions and tips on how to limit your plastic footprint. This book includes handy lists and charts for easy reference, ways to get involved in larger community actions, and profiles of individuals who have gone beyond personal solutions to create change on a larger scale.

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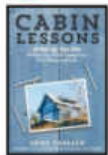
SUPERBIA!

This book is full of practical ideas for creating more socially, emotionally and environmentally sustainable neighborhoods. First the authors trace the history of the suburbs and how they fail to meet many people's needs. Then they describe how existing neighborhoods can be transformed, offering cohousing and new urbanist communities as examples. Examples from all over North America and beyond provide real-life proof that citizen planners can create superbia!

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green homes



CABIN LESSONS

Carpenter Spike Carlsen, his wife and their recently blended family of five kids set out to build a cabin on the north shore of Lake Superior. Part building guide and part memoir, *Cabin Lessons* tells the funny, wry and heartwarming story of their eventful journey—from buying land on an eroding cliff to (finally) enjoying the hideaway of their dreams. Learning as they go, and learning about themselves and each other along the way, they find in the end that they've built a strong family as much as a sturdy cabin.

#7609 \$14.95



TINY HOMES: SIMPLE SHELTER

Many people are rethinking their ideas about shelter, seeking an alternative to high rents or lifelong mortgages. This stunning book spotlights 150 builders who have taken things into their own hands by creating tiny homes (less than 500 square feet). Illustrated with 1,300 photos, *Tiny Homes* reveals a rich variety of small, homemade shelters and shares the stories of owner-builders on the forefront of the new trend toward downsizing and self-sufficiency.

#5972 \$28.95



TINY HOUSE LIVING

This book explores the philosophies behind the tiny-house lifestyle, helps you determine whether it's a good fit for you, and guides you through the transition to a smaller space. Inside you'll find worksheets and exercises to help you define your needs and goals, practical strategies for cutting through clutter, guidance through the world of building codes, design tricks for making the most of every square foot, and tours of 11 tiny houses and the unique stories behind them.

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Produce Homegrown Sweeteners

What are the best options for syrups and sweeteners derived from plants I can grow and process myself?

Depending on your region, your choices for homegrown sweeteners may include tree syrup, sorghum syrup (molasses), sugar beet syrup or paste, stevia, and sugar cane.

Two popular homegrown sweeteners are tree syrups and sorghum molasses. Syrup-seekers living in cold climates often opt for sugar maple or black maple trees because they yield a high volume and concentration of sap that's about 2 percent sugar. Making 1 gallon of maple syrup requires boiling down 40 to 50 gallons of sugar or black maple sap. Because red and silver maples produce a more watery sap, syrup-makers must collect and boil more of it to produce the same amount of syrup.

Other tap-ready trees include boxelder (a maple relative), birch, walnut, hickory and sycamore, but the cost and time commitment of making syrups from these trees can be prohibitive. Birch syrup necessitates twice as much sap as maple syrup does—up to 100 gallons of birch sap to yield 1 gallon of a more savory-tasting syrup.

In warmer climates, sorghum syrup is most common. Making sorghum syrup requires an upfront cost for a press to crush the sorghum canes and extract the juice, but it can yield a sweet payoff—1 gallon of sorghum syrup requires boiling down only 10 gallons of juice. You can go in on the price of the press with your neighbors as a way of cutting costs and achieving community self-sufficiency. Learn more about growing sorghum and producing homemade syrup, and find seed and press sources, at www.MotherEarthNews.com/Sorghum.

—Amanda Sorell



Tap into more info on sugaring at <http://goo.gl/YMnRMx>, and in *Farming the Woods*, available on Page 64.

Freeze-Drying vs. Drying Food

Will you explain the difference between drying food and freeze-drying food?

Dried (or “dehydrated”) food has shed its moisture via heat and air circulation, usually in an oven or in a simple electric or solar dehydrator. You can even dry herbs and low-moisture foods atop racks outdoors on a hot, dry day. Most home-dried foods keep well if stored in airtight containers in a dark, dry, cool location.

Freeze-drying food requires a more complicated process, wherein a machine freezes food to minus 40 degrees Fahrenheit. The freeze dryer then creates a vacuum and gradually warms the food, causing the ice to change directly into vapor—a process called “sublimation.” Finally, the unit causes the vapor to condense and freeze on its internal walls. After the food is removed, the unit warms up and the water drains. You can store the product in cans, jars or Mylar pouches.

Both types of food are lightweight and thus popular with backpacking enthusiasts. According to *Postharvest Technology and Food Process Engineering*, freeze-dried foods have a longer shelf life, retain flavors and nutrients better, and rehydrate rapidly, but are much more expensive to produce than dried foods.

Learn about drying fruits, veggies and more at <http://goo.gl/tPh97q>.

—Cheryl Long



Freeze-drying preserves the color and texture of most foods, even in extended storage, but is a pricey process.

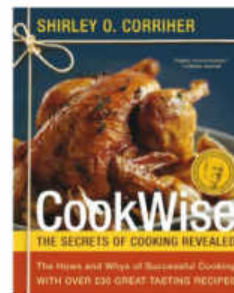
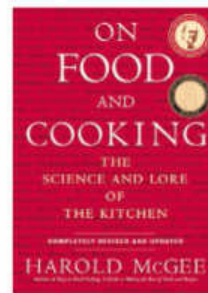
Myth: Petroleum Jelly Protects Poultry from Frostbite

I've heard that petroleum jelly (Vaseline) will protect chickens' combs from frostbite. Should I grab the grease and gather my birds?

Probably not. Winter cold snaps sometimes damage the tips of birds' combs, and black spots can form where tissue has frozen.

Applying petroleum jelly to combs will prevent chapping, as it would if you applied such a product to your lips. However, Dr. Scott Beyer, a poultry nutrition and management specialist at Kansas State University, confirms that petroleum jelly has no insulating properties, despite long-standing claims to the contrary from some poultry enthusiasts.

Breed selection is a wiser way to combat chicken frostbite. If you live in a place where winters are severe, choose breeds that have small “walnut” or “rose” combs and small wattles, such as Chantecler or Buckeye, as such



features are less prone to frostbite. Provide your flock with a draft-proof coop that will keep your birds dry. If the forecast calls for severe cold, consider putting a heat lamp inside the coop to offer extra protection against low temperatures.

—Cheryl Long

Books to Make You a Better Cook

I want to expand my cooking expertise. Can you recommend your preferred reference books?

If you want to whip up a meringue that doesn't shrink, have wondered why your homemade yogurt is grainy, or are eager to fix a mayonnaise that's "broken," it's time for you to delve

into the chemistry of cooking. Harold McGee and Shirley Corriher are authors of some of the most trusted cooking reference guides, which we recommend for your kitchen library.

In *On Food and Cooking: The Science and Lore of the Kitchen*, McGee, known internationally as a food chemist, blends history with useful explanations of why foods react the way they do when cooked. The 2004 revision features an additional nutrition-focused passage in several chapters.

Eco-Friendly Burial Options

I want to extend my conscientious lifestyle into my postmortem arrangements. Any suggestions?

If you're looking for a way to stay green in the grave, consider building your own casket out of harvested materials, or choose a biodegradable coffin or urn. Making such a decision can sidestep the high costs and unsustainable makeup of chemical embalming and a conventional casket.

Biodegradable coffin and urn options range from the Ecopod, a vessel made of recycled newspaper and mulberry pulp, to hand-built caskets crafted out of native, sustainably harvested wood. Simple kits, such as that used to build this Wisconsin pine model from Northwoods Casket Co. (www.NorthwoodsCasket.com), will accommodate almost any budget or level of carpentry expertise.

The Somerset Willow Company in England (www.WillowCoffins.co.uk) employs traditional techniques to weave locally grown willow into handsome, customizable caskets for burial or cremation. These willow coffins are lined with natural cotton, and can accommodate an oak nameplate. They ship to North America.

The Bios Urn company (www.UrnaBios.com) aims to convert cemeteries into forests with its biodegradable urns, which are made of coconut shell, compacted peat and cellulose, and are designed to support the early growth of a tree. Bios Urn's "life after life" model, available for both humans and pets, is compatible with nearly any kind of seed.

Many other routes exist to honor the Earth as well as the life you lived on it. The Green Burial Council (www.GreenBurialCouncil.org) certifies products, practices and places of rest. Whatever you decide, be sure to let your loved ones know of your decision, and define your wishes in your will. For more information on biodegradable coffins, DIY casket instructions, and planning natural burials, go to <http://goo.gl/iZGHye>.

—Amanda Sorell



JULIE ZAHN; TOP LEFT TO RIGHT: SCRIBNER; MORROW COOKBOOKS

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In his newest book, *Keys to Good Cooking: A Guide to Making the Best of Foods and Recipes*, McGee covers everything from pantry management and essential kitchen tools to specific food groups, such as eggs, vegetables and oils.

Corriher, an acclaimed culinary problem-solver, offers more than 230 recipes in *CookWise*—many of which are accompanied by a “what this recipe shows” headnote that reveals the chemistry behind the recipe, to further your learning. For example, she explains the use of different kinds of fats for frying, and suggests possible ingredient replacements for a diverse array of dishes.

In her second book, *BakeWise*, Corriher moves on to offer illuminating answers to the mysteries of baking, and examines all things oven-made, from the drying properties of egg whites to the perks of adding cheddar cheese to pie crust. One slice of valuable information, to get a taste: Corriher details why you may not like the results if you reduce or eliminate the sugar in a cake recipe, so you can make such adjustments intelligently.

Any of these four books, available on Page 64, will teach you how to swap ingredients successfully and will make you a more knowledgeable and adaptable cook.

—Robin Mather

Can Dogs and Chickens Coexist?

How can you protect your chickens from dogs, or raise the two kinds of animals together harmoniously? We turned to our Facebook community for ideas on keeping Fido from frightening the flock.



I have a pit bull, Boston Terriers and a Chihuahua. When I got our first chicks, I kept them indoors in a wire crate under a heat lamp. Whenever the dogs came up to the crate, I would say, “Easy,” and gently put their paws into the cage and let the chicks nibble on them. As the dogs got used to the chicks, they would lie near the cage, and I would take the chicks into my hand, cover their bodies, and let the dogs sniff and lick them. By the time the chicks could go outside and free-range, the dogs knew they were part of our family, and either played with them or paid them no attention at all. (The Chihuahua had even killed two chickens before he came to live with me!) —Jodi Skoien-Tucker

One quick zap was all it took! When we built a chicken tractor, we put a low-voltage wire at ground level around the outer edge of the tractor and turned it on at night to deter raccoons, opossums and other pests. At first, our dogs behaved poorly. When we turned it on during the day, the dogs ran into it nose-first—once. A few weeks later, we let the birds out of the tractor. Initially, the dogs kept their distance, as though the birds had zapped their noses. Two years later, we have the best protector anyone could ask for in our mixed-breed bulldog, Butler. Whenever our ducks waddle to the frog pond, Butler follows close behind, waits, and then walks them back to the duck pen. —Judith Legare

Our cattle dogs and Cavalier King Charles Spaniel are especially gentle and protective of our birds. When the chickens were first introduced, we carefully observed the dogs and immediately corrected aggressive behavior. Since Duchess (our Australian Cattle Dog/Australian Shepherd mix) has started spending all of her time outdoors with the chickens during the day, we haven't lost any birds to predators. Set limits, praise good behavior, and let your dogs know those birds belong to you. —Tom and Laurie Bartlett

Choose pups from gentle parents and breeds, and keep dogs with a high prey drive separated from your birds. Don't be angry at a dog that instinctively responds to fluttering or running chickens. —Linda Hindman

I have Akitas and an Afghan Hound. They have a strong prey drive and would love a chicken snack, no matter how much training they receive. Our chicken pen is attached to our yard with a 6-foot chain-link fence, and I've added hardware cloth around the bottom. I also made sure to get chicken breeds that aren't flyers. The dogs got used to the chickens and will occasionally run along the fence, but, so far, I've not lost a chicken to a dog. —Jennifer Kassay Phelps

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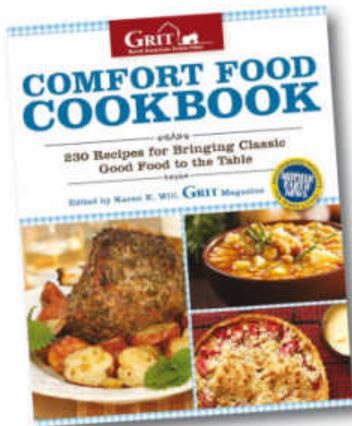
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I certify that the statements made by me above are complete and correct.

Bill Uhler, Publisher



Don't Forget to Pack a Spare: Tires Keep Livestock Water from Freezing

The past few winters have been brutally cold on our homestead in northeastern Pennsylvania.

The frigid temperatures have caused my goats' water buckets to freeze solid in just a few hours. I don't have electricity in the pasture to supply heated buckets for the animals, so I needed a low-tech, inexpensive way to keep the water from freezing so fast.

My husband stacked two 14-inch tires together, drilled holes through the sidewalls, and connected them with bolts. He used large washers to prevent the bolts from pulling through. We had some leftover spray foam insulation from a previous project, so we used it to fill the tires to the edge of the top bead. After the foam cured, we trimmed it flush to allow our 4½-gallon water bucket to sit securely inside the protective tires. The rim of the water bucket, being a little wider than the tire opening, allowed the bucket to stay suspended within the tires. A small amount of space remained between the ground and the bucket, so I filled it with a piece of leftover Styrofoam packing material for additional insulation.

The insulated tires have worked wonderfully. The black tires and bucket absorb the sun's warmth during the day. Even on frigid days, only a thin layer of ice forms on top of the water, which isn't enough to prevent the goats (or birds!) from drinking. This season, I plan to place a buoyant object into the



Insulated tires allow Bubba, an Angora goat, to drink fresh water all winter.

bucket—such as some kind of thick ball that the goats won't be able to bite—to cause enough agitation on the water's surface to prevent ice from forming altogether.

Susan Hartz
Zion Grove, Pennsylvania

How to Split Firewood Efficiently

I have a great tip about how to split a large chunk of firewood using steel wedges, a chainsaw and a sledgehammer. This method is especially useful if the log doesn't have any cracks (or "checks") to put a steel splitting wedge into.

With your chainsaw, cut two shallow grooves—about 2 inches deep and parallel to each other—into the face of the log. Place a steel wedge into each groove and pound both in with a sledgehammer. Usually, the log will split readily.

Phil Wallace

Container Tubs for Salad Gardens

I bought a few plastic tubs that cost about \$7 each and are approximately 20

by 28 inches and 6 inches deep. They're traditionally used for mixing concrete. I grow lettuce in the tubs during winter on my south-facing deck. I've had great success, and I love harvesting leaves from just outside my front door.

Sue Barthelow
via Facebook

Thanks, Sue! We agree—these inexpensive tubs are a solid setup for salad gardens. They also come in a smaller size—14 by 4.7 inches and about 4 inches deep—that sells for less than \$5 at most hardware stores. —MOTHER

Stay Warm This Winter with a 'Hap'

Everybody knows what a quilt is, but have you heard of a "hap"? Haps are similar

to quilts and were once commonly made and used by the folks who lived in the Pennsylvania mountains.

Old wool coats stitched together form the top—I think polar fleece would work, too. You can use any design you desire for the top of the hap. Heavy-duty flannel or an old polar-fleece blanket could work for the backing of the hap.

Grammy's and Mom's haps were so warm and wonderful because they filled the blankets with 1 to 2 inches of clean, carded sheep's wool. They knotted the haps together with string every few inches to keep the wool from moving. Haps are heavy, but worthwhile because they're warmer than any electric blanket I've ever tried. They can be challenging to clean, though, so use a sheet to separate them from direct body contact.

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Secure Woodpile Cover

I cut and split firewood each fall and set it outside to dry until the following fall, at which point I store it in the cellar for that heating season. Throughout the years, I've tried many ways to keep protective tarps from sliding off my woodpiles, but I've had little success. I've tried ropes, old tires, lumber and bungee cords. None of these items was able to stand up to storms, they were time-consuming to install and remove, and I always ended up with a tarp blowing in the wind.

I've finally come up with a system that works well. I use a screw gun to screw 3-inch vinyl squares (cut from siding scraps) through each grommet on the tarp and into the logs. I use two pieces of vinyl for each screw. If I need to attach the tarp at a point without a grommet, I can put a screw with the vinyl squares through the edge of the tarp or double the tarp over.

I've used this method for four years now and haven't had one tarp come loose. By the time cold weather comes back around, my year-old firewood is well-seasoned and dry. As an added bonus, the vinyl siding squares are strong and don't break down in the sun.

*John Bragg
Canaan, Maine*



Air haps out in spring, store them in a cedar chest during warm weather, and then look forward to their warmth again the following winter!

*Nancy Wolcott
Mapleton Depot, Pennsylvania*

Emergency Blankets Save Plants, Too!

My husband and I volunteer with the local fire department. I noticed that the medical team was using heat-reflective emergency blankets to keep victims warm. I snagged an empty package and read, "Emergency Blanket: 52 by 82 inches; reusable; can offset hypothermic reactions; reflects sun; retains up to 90 percent of body heat; for emergencies, camping, sporting events and more!"

Wow—my head was spinning with ideas! I've heard that shiny, reflective mulches confuse some plant pests. Other gardeners swear reflective light boosts yields because it increases the amount of sunlight that reaches the plants. I now use these Mylar blankets as a backdrop for my plants during cloudy winter

periods, and as a cover over my plants on freezing nights. What a difference! My plants don't freeze anymore, and I even think they look greener.

I plan on using these emergency blankets next gardening season, too, by hanging them behind my trellises to reflect more light onto my vertical plants.

*Deborah Young
Foxworth, Mississippi*

Pass the Soup, Please

When serving soup at the dinner table, keep it warm in a clean, automatic coffee maker, which you can plug in and place at the table. This technique keeps warm soup within arm's length, and the soup doesn't scorch—plus it's easy to pour.

You can find many of these automatic coffee makers and carafes at thrift stores for a nominal cost.

*Caroline Burgess
Mesa, Arizona*

Enlist the Elements

To save energy in winter, we freeze nearly full water bottles by placing them outside.

We then place the frozen bottles inside our fridge behind our food, and, as a result, the refrigerator doesn't have to work as hard to stay cool.

*Tom Preble
Peyton, Colorado*

Hatch a Fire with Cardboard Egg Cartons

My wife buys eggs in a paper container instead of Styrofoam because the empty cardboard egg cartons serve as excellent fire starters for our woodstove.

*Henry Fraas
Ransomville, New York*

Clear Counter Space with a DIY Recipe-Card Holder

We have limited counter space in our kitchen, so we do everything possible to

conserve the little space we have. To hang our recipe cards, we simply clip them to a pants hanger and then hook the hanger onto a cabinet knob.

*Grace Moriarty
Hampden, Massachusetts*

Electric Pressure Cooker

Today's electric pressure cookers are a wonderful addition to the homesteader's kitchen. They take meat from the refrigerator to tender, juicy and table-ready in as little as 25 minutes—without even heating up the kitchen. In addition, rice, beans, potatoes and pasta are perfectly done every time without requiring the cook to stand at the stove and stir.

Simply place the ingredients in the pressure cooker, set the timer, and come back soon to a finished product.

Seasonal and Local: A Tumbleweed Christmas Tree

When I moved to Colorado in 1979, I was fascinated by tumbleweeds—something the locals considered a nuisance. I decided to use this native material for a home-made "Christmas tree," so I gathered three tumbleweeds, set them on newspaper, and spray-painted them white. One can of spray paint covered all three tumbleweeds.

After the paint dried, I used picture wire to hold the tumbleweeds together before adding a string of white lights with a white cord. A white cord is best because it blends in with the white paint, but there isn't any reason why you couldn't spray the

tumbleweeds green or another color of your liking. Tumbleweeds tend to roll around, so lean them against a wall for support.

If you prefer a free-standing "tree," however, you could get a thin dowel and paint it the same color as the tumbleweeds. Anchor the dowel in a large flowerpot filled with sand or dirt, and then attach the tumbleweed Christmas tree to the dowel with picture wire.

I think the finished project looks nice, plus it's a fun, nearly free way to create native Christmas décor. While tumbleweed crafts aren't a wild and free option in all parts of the country, other regions have their own dried weeds and branches that can be used in similar ways.

*Arlene Shovald
Salida, Colorado*



KAREN DIANA NELSON/ENOCH FARM

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After researching the large selection of electric pressure cookers available, I decided on one with a stainless steel inner pot and a yogurt setting. I now enjoy homemade Greek-style yogurt from raw Jersey milk that I purchase through a local dairy—it's creamy and delicious! The pressure cooker saves me time and energy, and I regularly put it to good use.

*Sonya Smith
Marshall, Texas*

Sonya, we couldn't agree more! A few of our editors swear by the Instant Pot electric pressure cooker for their meal prep. Read more about this timesaving kitchen tool at <http://goo.gl/eAM725>. —MOTHER

Reusable Bottle Labels

I recently crafted skin care products out of essential oils, witch hazel and other ingredients, and I tried to find a DIY label that I could remove from each bottle after it was empty.

I realized that the wide rubber bands that come on most organic vegetables work perfectly for this application. These reusable rubber bands are easy to write on with a magic marker, and the rubber provides a much-needed grip when your hands are damp.

*Karen Bentrup
Albuquerque, New Mexico*

DIY Fingerless Mitts

I knit wool socks to wear during our long, cold winters here in northern Vermont, but ultimately the socks wear out in the heels and toes—even after I repair them a few times.

After all of my knitting labor, and because of my appreciation for handmade, warm wool socks, I still manage to get





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Circle #48; see card pg 81

another practical use out of them by turning them into fingerless mitts.

By the time the socks wear out, the heel usually has a gaping hole that's perfect for fingers to slip through. I then cut an additional small hole for the thumb. Sometimes I sew a blanket stitch around the openings, or I just leave the openings as they are. I then machine-wash them with a load of jeans, which helps tighten the mitts. I wear the mitts while doing outdoor farm chores, and can slip my fingers in and out as needed.

*Norma Bromley
Newark, Vermont*

Recycle Old Hoses

I bet most MOTHER EARTH NEWS readers keep 5-gallon buckets that originally held paint, oil, etc., in an attempt to recycle and reuse. The plastic grips on the handles are uncomfortable, though, and they quickly become brittle and break away. To make a better grip, wrap a piece of old hose around the handle.

To do this, disconnect the wire handle from one side of the bucket, remove (or break off) the old plastic grip, cut a piece of hose to the length you wish, work it onto the wire handle, and then reattach the wire handle to the side of the bucket. This padded handle will be much easier on your hands.

*Tena Brown
Dobbins, California*

Custom 'Fire Dryer'

I installed a hook in the ceiling near my woodstove, and then hung a lightweight chain with 1-inch links to hang wet clothes from. My chain is about 5 feet long, so it holds many hangers. My sister calls it my "fire dryer."

*Darla Tillinghast
Riva, Maryland*

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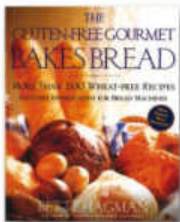
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(CONTINUED FROM PAGE 9)

Attacks," revealed that obesity contributes to inflammation, heart disease, diabetes and certain cancers. If an abundance of soy is fed to animals and added to our processed foods, then we will continue to become fatter and less healthy. I was happy to see, on Page 7 of the August/September 2015 issue, that MOTHER EARTH NEWS is coordinating a project to test omega fatty acid levels in pastured meat, eggs and dairy products. I'm excited to see those results! Thanks for the well-researched information; I'll make sure to share it.

Martha A. Berg
Fairhaven, Massachusetts

See Pages 4 and 45 for more about this emerging health issue. —MOTHER

A Fan Since 2004

I've been a fan of MOTHER EARTH NEWS since 2004. An article concerning nutrition in our food supply titled "Is Agribusiness Making Food Less Nutritious?" (June/July 2004) is what brought your magazine to my attention. The article was a comparison of the concentration of nutrients in our food between 1975 and 2004.

I appreciate all of your articles, and every day I look forward to the information you send in your free online newsletters. They're the only emails I read top to bottom! Thank you for your honest and valuable content.

Wesley Thompson
West Jordan, Utah

Great Time at Wisconsin FAIR

This year, I attended my first MOTHER EARTH NEWS FAIR in West Bend, Wisconsin. Long story short, it blew my mind! I'm 23 years old, and dream of becoming a homesteader someday. Attending the FAIR made that dream seem attainable. I think I learned more useful and valuable information in those two days than I learned in my four years of college. From attending aromatherapy lectures to watching Joel Salatin butcher a chicken, the FAIR was everything I imagined and more. It will definitely not be my last—thank you!

On another note, for dinner last night I made the Chiles Rellenos Recipe featured in Barbara Damrosch's article "Stars of the Summer Garden: Cucumbers and Peppers

Take Center Stage” (Gardener’s Table, August/September 2015). They were amazing! What a great way to showcase the beautiful poblano pepper—as opposed to throwing it into salsa and allowing it to drown in tomatoes. Thanks for the recipe!

Laura Tacheny
Madison Lake, Minnesota

A Call for Faster Progress

I enjoyed Bryan Welch’s article “Our Quest to Create a Sustainable Farm” in your October/November 2015 issue. It’s a pity that sustainable lifestylers such as Mr. Welch are in the minority. I think people are slowly turning toward sustainability, but we need to mobilize rapidly to be effective. We have almost



Do Monarchs Like Zinnias?

I live in a ground-floor apartment and have a nice growing space for flowers and vegetables in front of the building. This year, I planted heirloom and organic plants, including zinnias. These zinnias did well and have attracted an unusual number of monarch butterflies. While this did please us, we all assumed that their plant of preference was milkweed. Can you enlighten us?

David Rygh
Monroe, Wisconsin

Monarch caterpillars must feed on milkweed leaves. The adults only lay eggs on milkweed, but they feed on nectar from many kinds of flowers, including zinnias. —MOTHER

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Circle #24; see card pg 81



Dear MOTHER

passed a dangerous tipping point, and our planet can't continue to withstand the manner in which the majority of people treat it!

Brian Holland

North Canterbury, New Zealand

We Found Our Tribe

We are so grateful to have had the opportunity to meet the MOTHER EARTH NEWS crew at the Wisconsin FAIR—what a refreshing bunch of enthusiasts! The passion and dedication you all have for your jobs, knowledge base and customers is incredible. The MOTHER EARTH NEWS FAIR is so much more than the ad in the magazine can describe.

First of all, it really is for everyone. I think we may bring along a group of friends and family next year—the excitement is contagious! The FAIR is also encouraging to those who are in the middle of their homesteading adventures. We really found our people—our tribe. Nobody, not one person the entire weekend, said, “Why would you do that?” about the way we’re farming. It was such a joy to be surrounded by like-minded people who get it.

The FAIR was also a great opportunity to make connections, get information, find vendors for that special item you’ve been looking for, and listen to speakers who rock in their areas of expertise. It was seriously a life-changing weekend!

Jennifer Eby

Cassopolis, Michigan

Apple Cider Press

Here is a picture of the finished cider press I made by referring to the article “Build Your Own Cider Mill” (September/October 1981). We pressed two plastic grape crates of apples—‘McIntosh,’ ‘Golden Delicious’ and ‘Cortland’—and got 4 gallons and 1




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Circle #4; see card pg 81

quart of great-tasting apple cider, which we froze.

*Richard Lancaster
Westfield, New York*

Solar Ovens

I enjoyed the article "Everyday Solar Cooking" in your August/September 2015 issue. I love that people are trying things such as solar cooking—and succeeding!

Online tips for cooking various foods with a conventional slow cooker might be relevant to cooking in a solar oven. Be aware that for meat and other foods, the temperature has to reach 145 degrees Fahrenheit within a short time to avoid food poisoning.

*Robert Rinehuls
Tallahassee, Florida*

Rhubarb Leaf Bird Bath

While reading the August/September 2015 issue, I saw the reader-submitted project "DIY Leaf-Pattern Stepping Stone" (Country Lore). I also make stepping stones with leaf molds. I would like to add that if you make a "hump" of sand to use as a mold, you can then make a leaf-pattern bird bath.

*Lorraine Rezentes
Floyd, Iowa*

An Honorable Hog Harvest

Recently, MOTHER EARTH NEWS shared my Facebook post about the upcoming Hog Harvest class that we (at Shady Grove Farm) offer. When the magazine shared this, many people opposed to eating meat made rude, angry and mean comments regarding the harvesting of animals for food.

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Circle #49; see card pg 81

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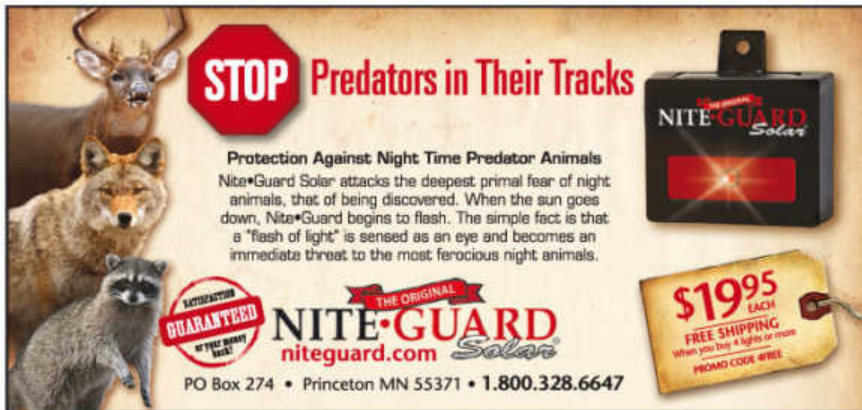
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Circle #36; see card pg 81



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Circle #26; see card pg 81

One of the comments was in reference to our use of the term "harvest" instead of "slaughter" or "butcher."

I believe that one of the most important aspects of my job as a farmer is to bridge the gap between people and food. It's my opinion that if we're going to eat meat, then we should have a true and realistic understanding of how that meat reaches our plates. I prefer the word "harvest" because, first of all, that is exactly what it is to me: a harvest of food. Just as we harvest carrots, tomatoes, kale, onions, etc., we also harvest meat.

Secondly, I believe that in order to take back our food system from corporations, we need to change people's perspectives. One way to do that is to keep things positive. "Harvest" is much more positive than "slaughter." After all, we don't "slaughter" carrots or "butcher" beets. Plant or animal, we're taking a life to sustain our own.

*Randy Buchler
Gwinn, Michigan*

Beet Broth Benefits

Beets are one of my family's favorite vegetables, so I really appreciated Barbara Damrosch's article "Winter's Glowing Root Vegetables" (Gardener's Table, February/March 2015). She mentions that "the nutrients that give beets their fine color are soluble in water, which means their nutrients may vanish in boiling water." I learned from a friend, who does research on beet pigments, that if you consume this water fairly soon after you steam or boil your beets, when the beet broth is still red (not brown), you should still get some of the beet broth's nutritive benefits. At our house, we use the beet broth in smoothies instead of drinking it straight.

*Julie Perkins
DeMotte, Indiana*

Long-Lost Plowboy Interview

I searched for years to find a copy of an interview I remembered with Dr. Linus Pauling (Plowboy Interview, January/February 1979). Dr. Pauling was a two-time Nobel Prize winner, one of the founders of the fields of quantum chemistry and molecular biology, a peace activist, and a proponent of taking large doses of vitamin C for optimum health.



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Circle #17; see card pg 81



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Circle #59; see card pg 81



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One day, I saw the name "MOTHER EARTH News" and a bell went off in my head. I knew that was where I'd originally read the interview! I've told dozens of people about the interview—available at <http://goo.gl/sQ6wpA>—and I'm so glad to have finally traced it back to its source.

*Rick Deuel
Rochester, New York*

Great Customer Service

I just want to thank you for having such excellent customer service. I had to call to change the address on my subscription. The call was answered after the first ring, and I didn't have to be transferred. Also, the representative was so nice. I wish I could remember her name. Great job!

*Heather Rosado
via Facebook*

Regional Gardening Article Was Disappointing

I was disappointed in the article "Eat from Your Garden All Year: A Regional Guide" in the August/September 2015 issue because it skipped right over the lower South.

A common trend seems to be that most authors know little about our area, and therefore completely ignore it. If it isn't the Pacific Northwest, New England, Ohio or Virginia, it just gets overlooked in the sustainability and permaculture world!

*Aaron White
Columbia, South Carolina*

If only North America wasn't so danged big! Covering every region is always a challenge for us, and we're sorry the article didn't include yours. If you need recommended spring and fall planting dates for your specific ZIP code, visit our online "What to Plant Now" page at <http://goo.gl/LyM3HG>. —MOTHER

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Last train out to get off the grid?

Amazing "Solar Generator" Is Like Having A Secret Power Plant Hidden In Your Home!



BY MIKE WALTERS
STAFF WRITER, OFF THE GRID NEWS

New solar powered backup provides instant electrical power in any outage or disaster.

If you have ever wanted to have an emergency backup system that supplies continuous electrical power, this will be the most important message you will ever read.

Here is why.

There is now a completely portable (and ultra-high efficient) solar power generator which produces up to 1800 watts of household electricity on demand when you need it most. News of this "solar backup generator" (it's the first "off-the-grid" breakthrough in 50 years) is spreading like wild fire all across the country!

Why?

The answer is easy. You see, this solar generator is extremely powerful and yet very simple to use. It produces continuous electricity and runs with absolutely no noise whatsoever. It emits no fumes. But the best part about the solar generator is that once you own one, you can...

Generate Free Electricity From The Sun!

Charged by the sun with a powerful solar panel, the unit then stores the power for your use when you need it. We all face natural disasters, with hurricanes, tornadoes, snow and ice storms cutting off electrical power to millions of Americans each year.

Then there are man-made disasters and outages. Blackouts and rolling brownouts are becoming common in many parts of the United States as our grid gets stretched beyond its capacity.

The truth is, we are extremely vulnerable to all kinds of meltdowns that can create temporary or even permanent electrical outages. That's why if you are one of the few Americans that thinks ahead, you need to...

Have A Solar Powered Backup In Place!

When you compare a solar generator to a gas generator, the difference is pretty remarkable. Here's why. First, gas generators make an incredible amount of racket... if you can even get them started in the first place. With a gas generator, you pull and pull some more, all because your generator has been sitting in the cold and the carburetor is playing hard to get. This, of course, is not a lot of fun in the dark. Another reason to avoid gas generators is that you just can't safely run one in your house. But the number one reason you don't want to be caught in a time of crisis with a gas generator is...

Gas Stations Can't Pump Gas Without Electricity!

It's true. When the power goes out, you're left with whatever gas you have on hand because the gas station pumps all run on electricity. A few gallons stored in a gas can means a little electricity for a little while, then it's quickly "back to black."

Here's the thing: I could go on and on about life without electricity and what a nightmare gas generators can be. But here's the bottom line: Solutions From Science is now offering an amazing power generating system that can provide plenty of electrical power in the event of an outage or emergency. And the best part is that you can have the power safely in your house.

A True Breakthrough In Home Power Generation!

Let me try to explain the features and benefits of a solar generator as simply as possible. If I could bring one over to your house and let you start plugging in appliances, you would immediately understand what all the fuss is about. But I can't do that. Anyway, here are some of the reasons I think you'll want a solar generator:

#1. Maximum Power In Minimum Time.

The solar generator can be set up in just a few minutes. Then, all you have to do is start plugging things in. It can run both AC & DC appliances anywhere... anytime.

#2. Back Up Power When You Need It Most.

It's called a "solar backup" because it's designed to come to your rescue when power trouble starts and your lights go out. Run a small refrigerator (high efficient ones are best) to keep your food from going bad.

#3. Portable Power.

If the going ever gets too tough where you are and you decide to "get the heck out of dodge," you simply throw it in the car and take off to a safer destination.

#4. Generates Permanent Power.

The unit provides 1800 watts of electricity at peak power. That's enough to run many appliances in your house. The generator is recharged constantly by the sun allowing you to use the system while charge it at the same time. Many users choose to keep appliances plugged in permanently to reduce electrical costs and help pay for the unit.

#5. Multiple Uses.

You can use your solar backup to run essential

appliances when emergencies arise. You can recharge phones, run shortwave radios, televisions, lights, fire place or furnace fans, as well as computers and printers. Plus, if you need to work in the woods at the cabin or in a boat, you can use the solar backup to run power tools, trimmers, blowers and coffee makers.

#6. Plug And Play Means Instant Power.

The emergency backup system comes ready to go. Just start plugging in your favorite household essentials.

By the way... the units go for about \$1797.00 plus shipping and handling.

But I'm going to show you a way around that. I have negotiated a very special offer for Mother Earth News readers.

Here's the deal. You can use coupon code **ME126** to get one for \$200.00 off as a Mother Earth News reader. To do that, the absolute fastest way to get one is by going to the website at:

www.MySolarBackup.com

If you would like to order by phone, you can call toll-free by dialing **877-327-0365**. Tell whoever answers that you want the "Solar Backup Generator" system rushed to you and you have a coupon from Mother Earth News.

Or, if you prefer to pay by check or money order (payable to Solutions From Science), simply send your payment to:

**Solutions From Science
Dept. Solar Backup ME126
815 W. Main St.
P.O. Box 518
Thomson, IL 61285**

I'm so convinced every American household needs a Solar Generator, that I've arranged for this special deal to get one to you at this dirt cheap price. (When you call, ask about their free shipping offer as well.)

Just hurry, call 877-327-0365.

Sincerely,
Mike Walters

P.S. One more thing. It's very important. Make sure you use coupon code **ME126** to get all the discounts you have coming as a Mother Earth News reader.

P.P.S. The website again is **MySolarBackup.com**. There's a ton of informational videos there for you to do some research on solar powered backups.

HOW MANY LIVES HAVE I SAVED?

HOW MANY LIVES CAN WE CHANGE ... TOGETHER?

THOUSANDS AND THOUSANDS, THAT'S HOW MANY. Starting in 1957, when I ranked #1 on the World List in the *Discus* (*Track & Field News*, Vol. 10, No. 12), I gave it all up because I knew that FDA-approved Anabolic Steroids would damage my heart. We've also had success with Ebola in Africa, including Cancer, because the Immune System has MORE ENERGY AVAILABLE to stop disease since it's easier for the body to split my water into hydrogen and oxygen (measured by electrolysis) with a Hydrogen Bond Angle (HBA) of 113.8° than ordinary water with a 104.5° HBA and ZERO energy. (Energy INCREASES as the HBA approaches Steam at 120°). After Anabolic Steroids were banned I said: "You wouldn't listen to me then, but will you listen to me now?" Unfortunately, all my Olympic Champion friends that took steroids are DEAD and "The Godfather of Steroids," Dr John Ziegler, died at 63: "I should have listened to him because I damaged my own heart. I wish I had never created Anabolic Steroids after seeing athletes abuse the drug!" Now, at 85 (it's a family effort), you can help our "Living Water Environmental Foundation" and take a 501C3 Tax Deduction!

Ask about the LIVING WATER ENVIRONMENTAL FOUNDATION and get a tax break when you call 845-754-8696 to order a John Ellis Water Machine or John Ellis Water

BODY ODOR IS ONLY ONE REASON YOU SHOULD CHANGE THE HYDROGEN BOND ANGLE (HBA) IN YOUR DRINKING WATER! Scientists: "Changing the basic properties of water has produced so many benefits it's difficult to list them all!" Most people don't realize they "smell" until somebody tells them!! As the smell gets worse, it's the smell of disease that your pet can discern but you can't ... unless it's the smell of e-coli in a public restroom or an "untreatable" municipal waste lagoon (Municipal letters on file)!

Typical case: A municipality in Colorado was subjected to fines of \$10,000 per day because of the smell of over 10 million gallons of human e-coli in a five-acre waste lagoon. When treatment experts said it was "untreatable," they decided to try JOHN ELLIS WATER (our home machines make two types of water with a HBA of 113.8° measured by Scanning Electron Microscope, unlike ordinary water with 104.5° HBA (ordinary distilled is the worst at 101 degrees)! They sprayed the lagoon with 1,000 gallons of our water and waited for 24 hours (it has a cascading effect). Then (like a public restroom if everyone drank this water) the smell of disease was GONE ... saving millions of dollars building a waste treatment plant. ORDINARY WATER CAN'T DO THAT!!

Dole Foods called us when they had a problem with MOLD SPORES including ALUMINUM NANO PARTICLES (to reflect heat) that are sprayed into the upper atmosphere to control global warming plus a host of other particulates destroying the banana plantations Ref: *Chemtrails: U.S. Air Force Academy Edition* i.e. drought in California with the soil and water loaded with nanoparticles that cause havoc with your health in general. In Mongolia, for example, 80% of the land won't support crops anymore!

WHO'S CAUSING HEALTH PROBLEMS? It's not the regulators. It's people "protecting you from health scams" that fooled the FDA and FTC—until they lost 40 lawsuits and the judges finally said: "They lack credibility!" because many of the people they smeared were M.D.'s with excellent credentials they thought they could smear with impunity because they had the power of the government behind them!



The Living Water Environmental Foundation

The profits from this endeavor go to our Ellis Estate in Shohola, PA. The property supports 3,000 Boy Scouts, Girl Scouts and disadvantaged youngsters. As a result, they say: "you people are pillars of society," preserving the area for future generations in the name of the nearby Gifford Pinchot Estate. It was Pinchot who started the national park service under his friend Teddy Roosevelt and coined the term "environmentalist." Below, our E5 water machine.



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However, many resisted extortion (\$100,000 "donation") and sued instead! Surprise! Regulators don't use them as "expert witnesses" anymore in legitimate cases! With 30 or more websites all linked to each other for profit, one man has a "Water Scam Report" selling PLASTIC DISTILLERS (puts toxic plasticizers into air & water!) that IGNORES a 20-page FTC Consent Decree C-3220 as a result of my complaint (11/16/87) because HIGH STEAM VELOCITY carries chemicals and mutated bacteria that survive boiling into distilled water. One retired chemistry instructor—with no degrees in this field linked to the scam with 100's of health complaints—was removed from the obscure university website until he admitted that they don't endorse him!

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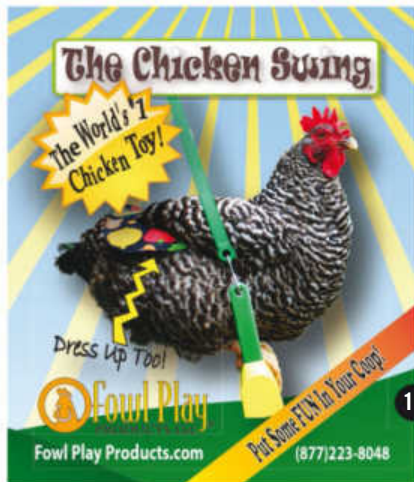
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